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TECHNICAL SUPPORT TO THE STATE OF RHODE ISLAND ON DEVELOPMENT OF AN AIR QUALITY MAINTENANCE PLAN

P. H. Guldberg, et al

Abcor, Incorporated

Prepared for:

Environmental Protection Agency

September 1975

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16. ABSTRACT

An air quality modeling analysis was performed in preparation of an Air Quality Maintenance Plan (AQMP) for the State of Rhode Island. The Climatological Dispersion Model (CDM), developed by EPA, was used to project future air quality levels and to test maintenance strategies for the years 1978, 1980, and 1985. The objectives of the analysis were to determine areas in the Metropolitan Providence Air Quality Maintenance Area (AQMA) where annual National Ambient Air Quality Standards (NAAQS) for sulfur dioxide (SO_2) and total suspended particulates (TSP) will be exceeded and to evaluate control strategies which will insure maintenance of standards in these areas through 1985.

The existing emissions inventory for the State was updated to the base year of 1974, and validation and calibration of the model were performed using 1974 air quality measurements. Using data from the State of Rhode Island Land Use Plan, growth factors were developed for projecting the inventory for 1978, 1980, and 1985. Utilizing the CDM, future SO_2 and TSP levels in the AQMA were predicted, areas where annual NAAQS will be exceeded were identified and the effectiveness of various control strategies to maintain NAAQS was evaluated.

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September 1975

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Division of Air Pollution Control
Providence, Rhode Island

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Environmental Protection Agency
Research Triangle Park
North Carolina

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TABLE OF CONTENTS

Section	Title	Page
I	INTRODUCTION	1-1
	A. Regulatory Background	1-1
	B. Study Objectives	1-3
	C. Technical Approach	1-5
II	SUMMARY OF RESULTS	2-1
	A. Future Base Case Air Quality	2-1
	B. Evaluation of Air Quality Maintenance Strategies	2-1
III	CURRENT AND PROJECTED EMISSIONS	3-1
	A. 1974 Emissions Inventory	3-1
	1. Point Sources	3-1
	2. Area Sources	3-2
	B. Growth Factors	3-4
	1. Point Sources	3-4
	2. Area Sources	3-6
	C. Projected Future Emissions	3-15
IV	AIR QUALITY MODELING ANALYSIS	4-1
	A. Modeling Factors	4-1
	B. Description of Atmospheric Diffusion Model	4-2
	1. General	4-2
	2. Model Modifications	4-3
	3. Input Data	4-4
	C. Model Validation	4-8
	D. Model Calibration	4-12
	E. Future Base Case Air Quality	4-13
	F. Evaluation of Air Quality Maintenance Strategies	4-23
V	REFERENCES	5-1

TABLE OF CONTENTS (continued)

Section | Title | Page

VI APPENDICES 6-1

A. Sources and Effects of Set I Pollutants 6-1
  1. Oxides of Sulfur 6-1
  2. Particulates 6-2

B. Area Source Emissions 6-3
  1. Updated 1974 Inventory 6-4
  2. Future Base Case Inventories 6-13
    a. 1978 6-13
    b. 1980 6-22
    c. 1985 6-31
  3. Future Unleaded Gas Strategy Inventories . . 6-40
    a. 1978 6-40
    b. 1980 6-50
    c. 1985 6-60
  4. Future 2.2 Percent Sulfur Strategy Inventories 6-69
    a. 1978 6-69
    b. 1980 6-79
    c. 1985 6-89

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I. INTRODUCTION

A. REGULATORY BACKGROUND

National primary and secondary Ambient Air Quality Standards (NAAQS) for both Set I pollutants (sulfur dioxide and total suspended particulates) and Set II pollutants (carbon monoxide, nitrogen oxides, hydrocarbons, and photochemical oxidants) were promulgated by the U.S. Environmental Protection Agency (EPA) on April 30, 1971 [1]. The primary standards are intended to protect the public health, while secondary standards are intended to protect the public welfare from any known or anticipated adverse effects. These national standards are summarized in Table 1-1. The target date for attainment of the national primary and secondary standards is 1975; however, a later attainment date may be approved where justified. All states were required to submit a State Implementation Plan (SIP) for attaining NAAQS. The State of Rhode Island has currently adopted air quality standards which are identical to the NAAQS.

On March 8, 1973, the EPA Administrator determined that none of the state plans was adequate to ensure maintenance of NAAQS once such standards were attained. Thus, the Administrator disapproved all SIPs with respect to maintenance of standards [2]. On June 18, 1973, EPA published [3] revisions to Part 51 of Chapter I, Title 40 of the Code of Federal Regulations, requiring in part that states identify areas that might, as a consequence of current air quality and/or of the projected growth rate of the area, have the potential for exceeding any NAAQS within the 10-year period from 1975 to 1985. States are required to submit a detailed analysis of the impact on air quality of projected growth in each designated Air Quality Maintenance Area (AQMA). Where NAAQS maintenance problems are identified by analysis, the states must also submit an Air Quality Maintenance Plan (AQMP) containing measures to ensure maintenance of NAAQS for a 10-year period from the date of submission of the Plan. The submittal of analyses and Plans will be made according to time schedules to be published by the Administrator no later than July 1, 1976.

TABLE 1-1

FEDERAL AIR QUALITY STANDARDS

Contaminant	Averaging Time	Concentration Primary Std. ($\mu g/m^3$)	(ppm)	Sec. Std. ($\mu g/m^3$)	(ppm)	Measurement Criteria[*]
Sulfur Oxides (SO_2)	Year	80	0.03	—	—	Arithmetic Mean
	Day	365	0.14	—	—	Maximum
	3 Hours	—	—	1,300	0.5	Maximum
Total Suspended Particulates (TSP)	Year	75	—	60[**]	—	Geometric Mean
	Day	260	—	150	—	Maximum
Carbon Monoxide (CO)	8 Hours	10,000	9	10,000	9	Maximum
	1 Hour	40,000	35	40,000	35	Maximum
Photochemical Oxidants (O_3)	1 Hour	160	0.08	160	0.08	Maximum
Hydrocarbons (Non-Methane)	3 Hours	160[†]	0.24	160	0.24	Maximum between 6 a.m. and 9 a.m.
Nitrogen Oxides (NO_2)	Year	100	0.05	100	0.05	Arithmetic Mean

---

[*] Standards other than those based on annual arithmetic or geometric mean are not to be exceeded more than once per year.

[**] For use as a guide in assessing implementation plans to achieve the 24-hour TSP standard.

[†] For use as a guide in devising implementation plans to achieve the oxidant standard.

Based upon information supplied to EPA in 1974 by the Rhode Island Department of Health, Division of Air Pollution Control (DAPC), one AQMA in Rhode Island was identified by the Administrator as having the potential for violating NAAQS between 1975 and 1985 [4]. The boundaries of this AQMA are shown by the shaded area in Figure 1-1; they include 21 municipalities centered around Metropolitan Providence. The composition of the AQMA is as follows:

- In Kent County: the City of Warwick and the Towns of Coventry, East Greenwich, and West Warwick
- In Newport County: the City of Newport and the Towns of Middletown, Portsmouth, and Tiverton
- In Providence County: the Cities of Central Falls, Cranston, East Providence, Pawtucket, Providence, and Woonsocket; the Towns of Cumberland, Johnston, Lincoln, North Providence, North Smithfield, and Smithfield
- In Washington County: the Town of North Kingston

The pollutants for which the Metropolitan Providence AQMA was identified are sulfur dioxide (SO_2), total suspended particulates (TSP), and photochemical oxidants.

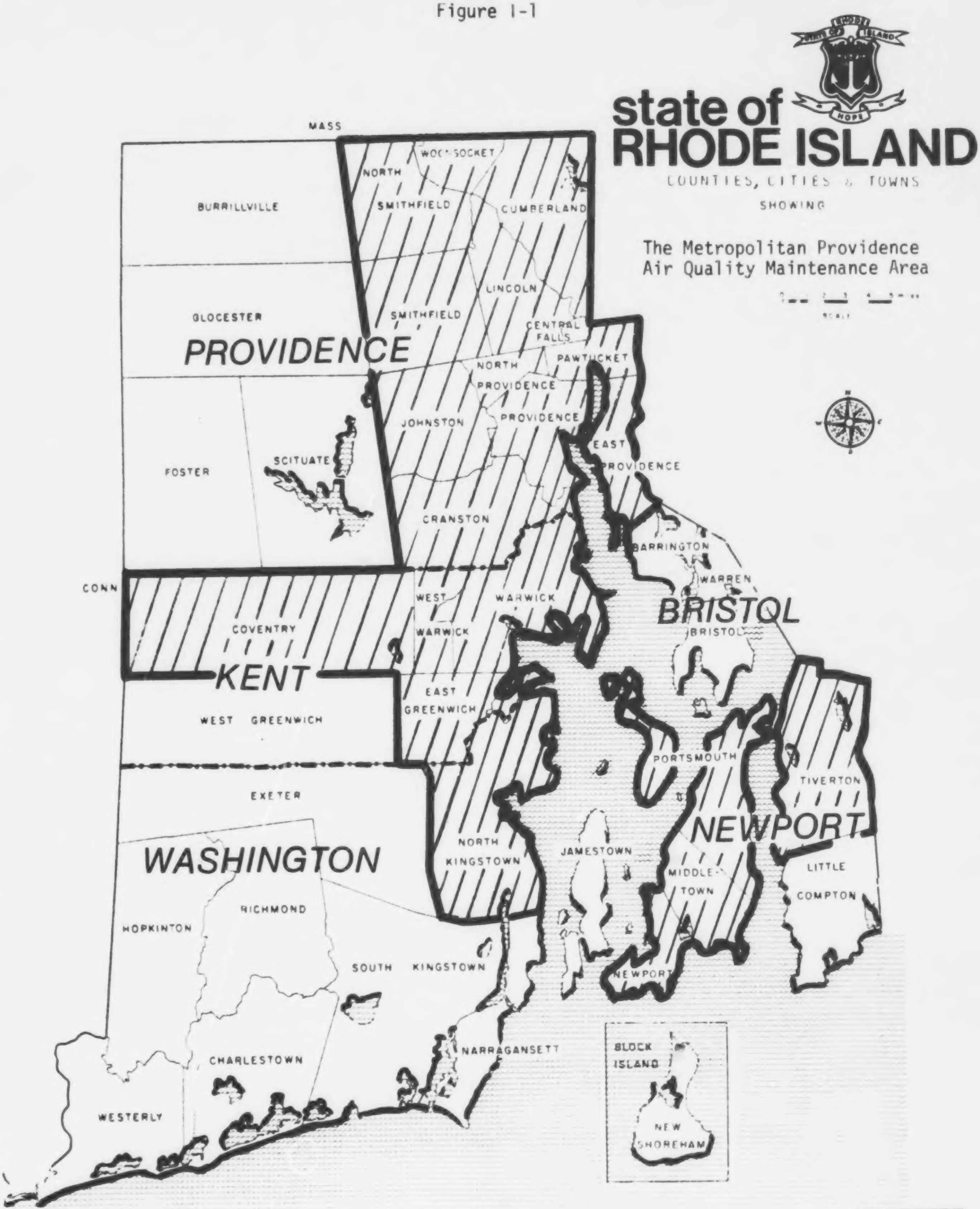
B. STUDY OBJECTIVES

Walden Research Division of Abcor, Inc., was retained by the EPA to provide technical assistance to the State of Rhode Island DAPC in developing an AQMP for the Metropolitan Providence AQMA. The objectives of the current work effort, as defined by EPA, were to perform air quality projection and control strategy analyses for the years of 1978, 1980, and 1985 to:

- Determine areas in the Metropolitan Providence AQMA where annual NAAQS for SO_2 and TSP will be exceeded, and
- Evaluate control strategies which will ensure maintenance of standards in these areas through 1985.

The current study considered only the annual national standards for SO_2 and TSP. It did not include investigation of photochemical oxidants. The State of Rhode Island has currently adopted air quality standards which are identical to the NAAQS.

Figure 1-1


state of RHODE ISLAND
COUNTIES, CITIES & TOWNS
SHOWING
The Metropolitan Providence Air Quality Maintenance Area
SCALE
MASS
CONN
PROVIDENCE
KENT
WASHINGTON
BRISTOL
NEWPORT
WOONSOCKET
NORTH SMITHFIELD
CUMBERLAND
BURRILLVILLE
LINCOLN
GLOCESTER
SMITHFIELD
CENTRAL FALLS
PAWTUCKET
NORTH PROVIDENCE
PROVIDENCE
JOHNSTON
EAST PROVIDENCE
FOSTER
SCITUATE
CRANSTON
BARRINGTON
WARREN
WEST WARWICK
WARWICK
COVENTRY
BRISTOL
EAST GREENWICH
WEST GREENWICH
PORTSMOUTH
TIVERTON
EXETER
NORTH KINGSTOWN
JAMESTOWN
MIDDLETOWN
LITTLE COMPTON
HOPKINTON
RICHMOND
SOUTH KINGSTOWN
NEWPORT
NARRAGANSETT
CHARLESTOWN
BLOCK ISLAND
WESTERLY
NEW SHOREHAM

C. TECHNICAL APPROACH

Air quality modeling analyses were performed to project future air quality levels and to test maintenance strategies. The Climatological Dispersion Model (CDM) developed by the EPA was used for these purposes. An overview of the technical approach employed in the air quality maintenance analysis is shown in Figure 1-2. The work effort entailed the execution of the nine basic tasks outlined below:

1. The Rhode Island point source emissions inventory was updated to the base year of 1974, and the information was submitted to the NEDS data bank at EPA.
2. Modifications to the CDM were made to allow for representation of stable atmospheric dispersion conditions.
3. Utilizing the base year point and area source emission inventories as inputs to the CDM, a validation of the model was performed by comparing predicted annual SO_2 and TSP levels for 1974 with measured air quality data in the AQMA from EPA's Storage And Retrieval Of Aerometric Data (SAROAD) system.
4. The CDM was calibrated using the statistical relationship between measured and predicted pollutant concentrations derived in the model validation.
5. Using data from the State of Rhode Island Land Use Plan [5], growth factors were developed for projecting point and area source SO_2 and TSP emissions for 1978, 1980, and 1985.
6. The above growth factors were applied to the base year (1974) emissions inventories to obtain the projected base case inventories for 1978, 1980, and 1985. These projected base case emissions incorporate the effects of Federal New Source Performance Standards (NSPS) and the Providence Transportation Control Plan and assume full compliance with current state air pollution control regulations, shown in Table 1-2.
7. Utilizing the projected inventories as inputs to the CDM, future annual SO_2 and TSP levels in the Metropolitan Providence AQMA were projected for the years 1978, 1980, and 1985. Based on these modeling projections, areas in the AQMA where annual NAAQS for SO_2 and TSP will be exceeded were identified.
8. A presentation was made for the DAPC and the EPA of the results of the future air quality projections for the AQMA. The principal sources of pollutant emissions were identified to aid

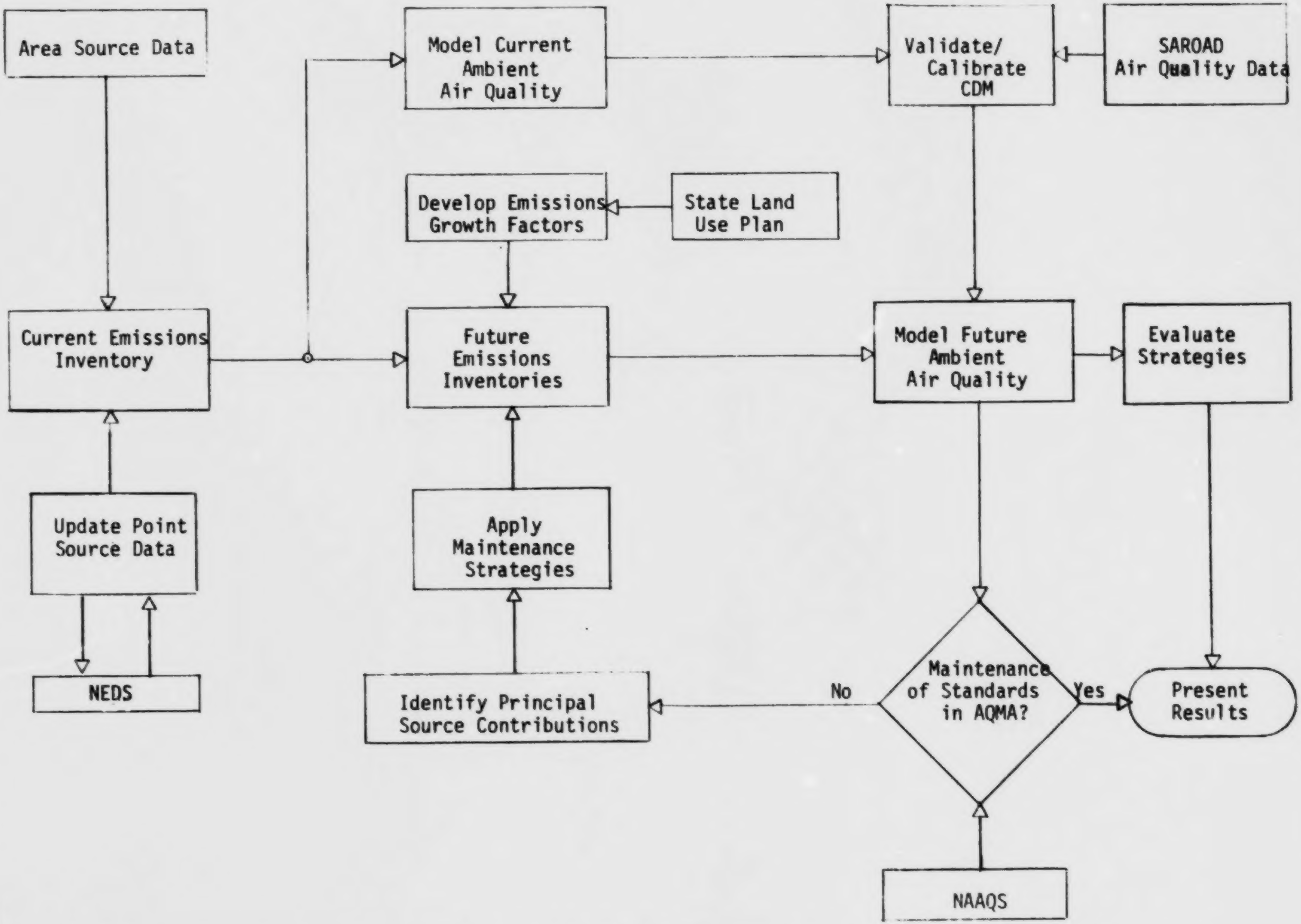

Area Source Data
Model Current Ambient Air Quality
Validate/ Calibrate CDM
SAROAD Air Quality Data
Develop Emissions Growth Factors
State Land Use Plan
Current Emissions Inventory
Future Emissions Inventories
Model Future Ambient Air Quality
Evaluate Strategies
Update Point Source Data
Apply Maintenance Strategies
NEDS
Identify Principal Source Contributions
No
Maintenance of Standards in AQMA?
Yes
Present Results
NAAQS

Figure 1-2. Overview of Technical Approach to Air Quality Maintenance Analysis for Sulfur Dioxide and Total Suspended Particulates

TABLE 1-2
SUMMARY OF CURRENT RHODE ISLAND AIR POLLUTION CONTROL REGULATIONS

Regulation Number	Topic
1	Visible emissions. No discharge as dark as #1 Ringelmann chart allowed for over 3 minutes per hour.
2	Hand-firing of soft coal prohibited.
3	Particulate emission limitations by process weight.
4	Open burning prohibited.
5	Preventing particulate matter from becoming airborne.
6	Air contaminant detectors required for power plants.
7	Emission of air contaminants detrimental to persons or property prohibited.
8	Sulfur content of fuels limitations (1% S for oil).
9	Plan approvals.
10	Air pollution episodes.
11	(Reserved for vapor recovery regulation.)
12	Control of emissions from incinerators.
13	Control of particulate emissions from fuel burning equipment.
14	Record-keeping.
15	Control of organic solvent emissions.

these agencies in their selection of air quality maintenance control strategies.

9. Control strategies specified by the DAPC and the EPA were entered into the future air quality predictions through adjustments to the projected point and area source emission inventories. The CDM was used to evaluate the effectiveness of the various control strategies in maintaining annual NAAQS for SO_2 and TSP through 1985.

Projected emissions for the future base case in 1978, 1980, and 1985 were developed using growth projections from the State of Rhode Island Land Use Plan [5]. The future base case using CDM was evaluated assuming that the State Land Use Plan would be implemented. A continuation of historical trends in land use growth was evaluated qualitatively.

Additional strategies specified for evaluation were:

1. An annual inspection and periodic maintenance program for all large industrial, commercial, and institutional combustion boiler sources.
2. Use of unleaded gasoline by all 1975 and newer light-duty motor vehicles.
3. Increasing the limit on sulfur content at all facilities using residual oil to 2.2 percent.

These strategies were only evaluated individually, i.e., not in various combinations.

II. SUMMARY OF RESULTS

A. FUTURE BASE CASE AIR QUALITY

The modeling results indicate that future ambient air quality levels of sulfur dioxide (SO_2) will not exceed the annual primary standard of 80 $\mu g/m^3$ in the Metropolitan Providence AQMA through 1985. The maximum predicted annual average concentration was 54 $\mu g/m^3$ in the City of Providence in 1985.

Future total suspended particulate (TSP) levels are also predicted not to exceed the annual primary standard of 75 $\mu g/m^3$. However, TSP levels are predicted to exceed the annual secondary standard of 60 $\mu g/m^3$ by 1.4 $\mu g/m^3$ in the City of Providence in 1985.

B. EVALUATION OF AIR QUALITY MAINTENANCE STRATEGIES

Evaluation of the four air quality maintenance strategies described in Section I.B. indicates:

1. The projected effects of an inspection/maintenance program for large boiler sources on annual TSP levels are minimal. Predicted TSP concentrations in future years are reduced, at most, by 1 $\mu g/m^3$ from corresponding base case levels. The maximum predicted base case concentraion of 61.4 $\mu g/m^3$ in Providence is reduced only to 60.7 $\mu g/m^3$. It is expected, however, that this strategy would more significantly reduce maximum daily TSP concentrations in the AQMA. Thus, implementation of this strategy will not prevent the annual secondary TSP standard from being exceeded slightly in 1985.

2. Implementation of a strategy requiring use of unleaded gasoline by all 1975 and newer light-duty vehicles will significantly reduce total particulate emissions and will maintain ambient annual average TSP concentrations in the AQMA below the secondary standard through 1985. The maximum predicted TSP concentration for this strategy was 58 $\mu g/m^3$, occurring in 1978 in the City of Providence.

3. Increasing the sulfur content of residual oil used by facilities in Rhode Island and southeastern Massachusetts to 2.2 percent sulfur will cause the annual primary SO_2 standard to be significantly exceeded in the AQMA through 1985. The maximum predicted SO_2 concentration for this strategy was 90 $\mu g/m^3$, occurring in 1985 in the City of Providence.

4. Non-implementation of the State Land Use Plan, allowing for continuation of historical patterns of growth, was evaluated qualitatively in the current study. This strategy will have two principal effects. First, it will increase base case 1985 projected industrial area source emissions of SO_2 and TSP in the AQMA from 4 to 6 percent in the municipalities of Providence, Pawtucket, Central Falls, Woonsocket, and North Smithfield and 20 percent in the City of Newport (see Table 4-4). These increases, however, are less than 1 percent when expressed in relation to the total emissions from each municipality. Second, the continuation of urban sprawl will make inefficient use of available land in future residential, commercial, and industrial developments in the AQMA [33]. This inefficiency will, in turn, cause an increase in future projected SO_2 and TSP emissions from transportation and space heating sources.

III. CURRENT AND PROJECTED EMISSIONS

Air pollutant emission sources can be broadly classified into two categories: stationary sources and mobile sources. Stationary sources are those for which emissions can be identified with a plant or an installation that remains geographically fixed. Mobile or transportation sources are those that are not fixed in a certain location; these include motor vehicles, aircraft, trains, and ships. The principal emissions from stationary sources are due to external fuel combustion in boilers, industrial processes, and solid waste disposal. The principal emissions from mobile sources are due to internal fuel combustion in engines and tire wear.

The many different types of emission sources can be classified by size as either point or area sources. Point sources are single, identifiable sources of pollutants, such as power plants or municipal incinerators. In every urban region, there are also a large number of small emission sources which cannot be treated individually in model calculations. These sources, which include residences, commercial buildings, small industries, and transportation sources, are aggregated into a workable number of area sources.

Emissions from sources in the State of Rhode Island have been calculated utilizing EPA emission factors [6] based upon fuel consumption or raw materials input. Emissions are classified primarily on the basis of process, location, source type, and chemical species.

A. 1974 EMISSIONS INVENTORY

1. Point Sources

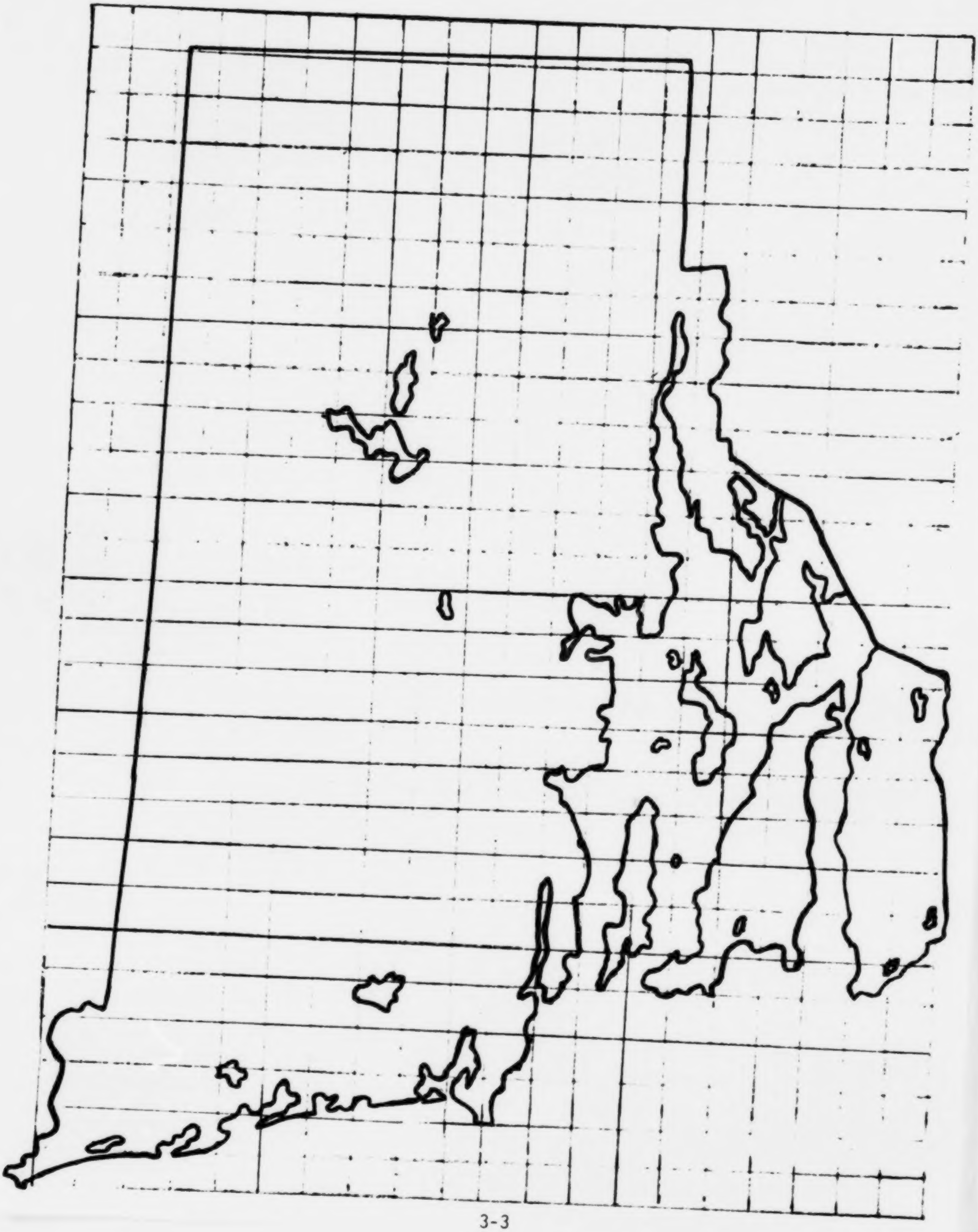
The 1972 point source emissions inventory for Rhode Island was obtained from EPA's NEDS data file and updated to the base year of 1974 using data collected by the Rhode Island Division of Air Pollution Control. The update process consisted of several steps. First, sources that have been closed down, principally open burning dumps, were deleted from the inventory. Next, extensive changes were made to existing sources in the inventory to update source fuel use, emission rates, control equipment, and other parameters. In addition, the UTM coordinates used to identify source locations were rechecked and several errors corrected. Finally, new emission sources were added to the inventory. The updated inventory was then submitted in the proper machine-readable format to the NEDS contact at EPA, Region I, for inclusion in the NEDS data file. The inventory includes point source emissions of SO_2, particulates, nitrogen oxides, carbon monoxide, and hydrocarbons.

The updated 1974 point source inventory was also converted to the proper format for input to the Climatological Dispersion Model (CDM) and used in the model validation (see Section IV.C). For this purpose, only SO_2 and particulate emissions were included. Also, additions were made to the inventory to include the two principal point sources in southeastern Massachusetts adjacent to the Metropolitan Providence AQMA, namely, New England Electric's Brayton Point and Montaup Electric's Somerset power plants. The most recent (1973) source emissions and plant operational data were obtained from the Federal Power Commission for these two plants (FPC Form 67). In addition, data were obtained from EPA, Region I, detailing the quantities of coal burned by Brayton Point in 1974 under variances granted on Massachusetts SIP regulations. Thus, we regard these data as the best available estimates of 1974 fuel use by the two power plants.

2. Area Sources

The 1972 area source fuel use and emissions inventory for Rhode Island and southeastern Massachusetts was developed by the DAPC [7] and consists of a network of 540 grid squares, each 9 km^2 (3.5 $miles^2$) in area, as shown in Figure 3-1. The area source inventory is created by a PL/1 computer program that outputs emissions source cards for SO_2 and particulates in the proper format for input to the CDM. Several modifications were made to the PL/1 program to correct errors found by the DAPC and to update fuel use totals using the most recent U.S. Bureau of Mineas data. After extensive efforts by Walden, EPA, and the DAPC, fuel use data for 1974 (the validation/calibration base year) could not be obtained, since these data will not be processed by the Bureau of Mines until September 1975. Thus, the decision was made to use 1973 fuel totals as the most recent data. It was

Figure 3-1. Grid Square Network for the Rhode Island Area Source Emissions Inventory



judged that any growth in fuel use from 1973 to 1974 was more than compensated for by consumer energy conservation efforts during the energy shortage. This assumption was found to be valid in the Metropolitan Boston region during a study [8] conducted by Walden Research to evaluate the impact of the energy shortage on air quality levels. Thus, 1973 fuel totals are a reasonable estimate of 1974 fuel use and, at worst, overestimate 1974 fuel use and area source emissions. The modified area source inventory was used as input to the CDM in the model validation.

B. GROWTH FACTORS

Growth factors for the projection of the Rhode Island emissions inventory from the base year of 1974 to the future years of 1978, 1980, and 1985 were developed separately for point and area sources. Point source emissions growth was based on data collected by the DAPC regarding planned facility expansions and on manufacturing employment projections made by the Rhode Island Statewide Planning Program (SPP). Area source emissions growth was based on land use, population, and employment projections made by the SPP for the State Land Use Plan [5]. None of the developed growth factors accounted for any future energy conservation measures.

1. Point Sources

Emissions growth factors for existing point sources were developed on an individual basis from information regarding planned facility expansions provided by the DAPC. The DAPC also reviewed new facilities either under construction or planned for the near future in Rhode Island and found one facility, a municipal incinerator in the Town of Little Compton, Rhode Island, large enough to be represented as a new point source in the future emissions inventories for 1978, 1980, and 1985. The Northeast Incinerator in West Warwick, Rhode Island, is another facility that was originally thought to be a possible future point source. This incinerator is actually an existing facility, shut down because of noncompliance with federal New Source Performance Standards (NSPS). The latest information from EPA, Region I, however, indicates that the entire incinerator will have to be rebuilt to meet NSPS and that the owners do not plan such a reconstruction or reopening of the facility. One additional new point source that was included in the future emissions inventories was a fourth generating unit at the New England Power Company (NEPCO) Brayton Point power plant in Somerset, Massachusetts, near the Rhode Island border. This addition to NEPCO's power plant initiated operations in early 1975. Emissions assumed for these two new point sources in future years reflect all applicable federal NSPS.

For existing point sources in Rhode Island, the DAPC compiled 5-year projections of fuel use (from a 1974 base to 1979) for approximately one-half of the point sources in the State. In most instances, these projections represent growth. In some cases, however, reductions in fuel use are forecasted. For the purposes of projecting point source emissions through 1985, these projections were linearly extrapolated if they represented growth, but limited to the original 5-year projection if they represented reductions. Point sources for which projections were not available used an average growth factor derived from all sources in their Standard Classification Code (SCC) sub-category for which there were data. The few instances in which there were no projection data in an SCC sub-category pertain to process fuel use only. In these cases, a growth factor based on manufacturing employment projections was used.

Three point sources in Rhode Island are projected to be totally phased out in the future. The first of these, the Woonsocket Incinerator, will shut down completely by 1976. The other two are Narragansett Electric's South Street and Manchester Street power plants in Providence. These plants are projected to decrease their fuel use 10% per year, reaching total shutdown in 1985. Electrical power supplied by these plants will be replaced by the regional power grid and/or a proposed nuclear power plant [34].

The reserve capacity of the New England power grid is currently about 50%. A reserve of 20% is considered to be quite adequate [34]. This excess in regional generating capacity is due to the fact that new power facilities have been built in recent years to supply an anticipated growing demand for electrical power. During the last two years, however, demand for electricity has not only fallen behind historical trends, it has actually declined. Thus, no increase in power plant operations in Rhode Island is forecasted for the next five to ten years. Montaup Electric's Somerset power plant in Somerset, Massachusetts, has also been assumed to remain at its current level of operation through 1985. Detailed information concerning future operations at the Brayton Point plant was provided by NEPCO [34]. The EPA AQMP Guidelines [13] recommend the assumption of probable worst-case conditions in projecting future emissions. Since it is anticipated that the Federal Energy Administration may issue orders shortly for the conversion of units 1, 2, and 3 of Brayton Point to coal use, this conversion has been assumed in projecting future emissions. Because of the high ash content (greater than 10% by weight) of coal available for use at Brayton Point, units 1, 2, and 3 can only operate at 60% of full load when burning coal, or else the particulate control equipment will overload [34]. By contrast, these units currently operate near capacity on oil. Since NEPCO does not plan to upgrade their control equipment to handle the amount of particulates generated by burning coal in units 1, 2, and 3 at full load, these units were assumed to operate at 60% load in future years. Unit 4 is designed only for residual oil burning and was assumed to operate at full load in future years. Total future emissions from Brayton Point are projected to exceed current emissions, even with units 1, 2, and 3 operating at reduced load, because coal operation produces significantly higher emissions than oil operation for a given power output.

Additional adjustments were made to future point source emissions to account for sources not now in compliance with State air pollution regulations and expected to be brought into compliance in the near future. In 1974, three sources were operating in violation of State air pollution control regulation for particulates. The first of these, the Woonsocket Incinerator, was shut down on July 26, 1975. The other two are either on compliance schedules or will be shortly, to meet State regulations by 1978. These sources are the Pawtucket Municipal Incinerator and the Providence Sewage Sludge Incinerator.

2. Area Sources

a. Methodology

Fuel use growth factors for 1990 were developed, based on the State Land Use Plan [5] and the most current (revised) population projections [9]. Since the Land Use Plan is based on the less recent "Series C" population projections, adjustments were made wherever possible to incorporate the revised projections. These latest population projections include the effects of cutbacks by the U.S. Navy and the sharp decline in the birth rate, whereas the "Series C" ones do not. Additional adjustments were made to interpolate linearly the 1990 growth factors to the three years of interest, viz., 1978, 1980, and 1985.

Data from a report [10] recently released by the New England Regional Commission (NERC) concerning projections of New England's future energy needs indicate that sufficient supplies of most types of fuel will be available in Rhode Island in 1990 to satisfy the rates of growth projected in the State Land Use Plan. The NERC report notes that there probably will be a constraint on the future growth of natural gas supplies in New England. However, it was judged that this constraint would still allow for most, if not all, of the growth in natural gas use projected for the State. Thus, the current split of fuel use in Rhode Island among natural gas, distillate oil, residual oil, and electricity was assumed to remain constant through 1985.

The State of Rhode Island comprises 2,738 km^2 (1,057 $miles^2$) in area and is comparable in size to the average county in the United States, which has 2,989 km^2 (1,154 $miles^2$). Thus, growth factors were developed directly for subcounty areas in this program, bypassing the need for countywide estimates. Since most of the projection data in the Land Use Plan is provided on the town and city level, the 39 municipalities of the State were used as the subcounty areas for which growth factors were developed. Although the Plan provides in addition a graphical summary of projected use by $3.72 \times 10^5\ m^2$ (92 acre) grids, this graphical presentation does not explicitly apportion out the municipal projections, and it highlights only the principal land use in each grid, not the distribution of the different types of land use. Finally, the fuel use growth factors developed for each municipality were used in conjunction with EPA emission factors [6] to obtain projected growth in area source emissions of sulfur dioxide and particulates. No additional State regulations affecting SO_2 and particulate emissions are anticipated between now and 1985 [11]. New area sources will satisfy federal NSPS if they comply with current State air pollution control regulations (see Table 1-1). Growth factors developed for a given municipality were applied to every applicable emissions source in that municipality.

The 1974 area source emissions inventory for Rhode Island [7] contains emissions from sources in southeastern Massachusetts adjacent to the Rhode Island border. These emissions emanate from two principal urban areas associated with the municipalities of Attleboro and Fall River, Massachusetts. Growth factors for these two areas were obtained from data compiled for the Massachusetts AQMP by the Secretary for Environmental Affairs of the Commonwealth of Massachusetts. Growth factors for residential and commercial/industrial area source fuel use were based on population projection, and those for industrial area source fuel use were based on total employment projections. Growth factors for point sources in southeastern Massachusetts were developed from information supplied by the State Bureau of Air Quality Control.

The following sections detail the methodologies used to develop growth factors for area sources in Rhode Island.

(1) Residential Fuel Use. All residential fuel use in the 1974 emissions inventory is incorporated into area sources [7]. Fuel consumption for space heating, water heating, and cooking requirements for each area source grid square has been determined from estimates of dwelling units per grid square (prepared from land use maps) and typical fuel use per dwelling unit. Thus, the procedure used by the DAPC was not to apportion a statewide residential fuel use total to grid square, but rather to develop fuel use for each grid square based on the number of dwelling units in that grid.

The State Land Use Plan provides detailed projections of dwelling units for each municipality in 1990. Thus, data were available to do an Order 2 analysis, as specified and defined in the EPA AQMP Guidelines [12]. Note that the AQMP Guidelines do not specify explicit equations for developing growth factors. Rather, they acknowledge that formulas have to be developed on a case-by-case basis for each individual situation. Thus, the "Order" of the analysis only quantifies the level and detail of data being used in the growth factor development process; it does not imply a specific algorithm. The growth factor used for each municipality was the ratio of projected to current dwelling units, corrected for recent revisions to the Rhode Island population projections.

$$RES_i = DU90_i/DU74_i * C_i$$

where: RES_i = the 1990 growth factor for residential fuel use in municipality i

$DU90_i$ = the 1990 number of projected dwelling units in municipality i

$DU74_i$ = the number of current dwelling units in municipality i, to be dervied from the current area source inventory

C_i = the 1990 population adjustment factor for municipality i

$$DU90_i = \sum_{j=1}^{3} du90_{ij}$$

where: $du90_{ij}$= the 1990 number of projected dwelling units of density j (1, 2, and 3 = high, medium, and low) in municipality i

$$C_i = POPREV_i/POPLUP_i$$

where: $POPREV_i$ = the revised 1990 population projection for municipality i

$POPLUP_i$ = the Land Use Plan 1990 population projection associated with the dwelling unit projections for municipality i

In the absence of other information, the average number of rooms per dwelling unit in each area source grid square was assumed to remain constant. These data were obtained from the 1970 Census and used to develop the residential area sources in the 1974 inventory.

(2) Commercial/Institutional Fuel Use. Commercial/Institutional fuel use in the 1974 emissions inventory is split between point and area sources. This fuel consumption represents space heating requirements for commercial, governmental, and institutional facilities. Point sources include several large hospitals, Brown University, and U.S. Navy facilities. Fuel use for these latter sources was adjusted in the point source inventory update to reflect the recent cutbacks by the Navy. Growth factors for these point sources were developed on an individual basis using information regarding planned facility expansions on file at the DAPC and the Rhode Island Department of Economic Development.

Area source fuel use in the 1974 emissions inventory was developed from estimates of commercial and institutional acreage[†] for each area source grid square. Again, the procedure used by the DAPC was not to apportion a statewide fuel use total, but rather to develop fuel use for each individual grid square.

[†] 1 acre = 4,047 m^2

The State Land Use Plan provides projections of commercial and institutional land acreage by municipality in 1990. These projections, however, are rounded off to the nearest hundred acres and as such do not provide enough detail to be useful as a basis for commercial/institutional growth factors. As an example, commercial acreage is projected for only 19 of the State's 39 municipalities (49%) in 1990. By contrast, the 1974 emissions inventory lists detailed commercial acreage already present in 38 of 39 municipalities (97%), excluding only Block Island (the Town of New Shoreham). Institutional land acreage projections present the same problem.

The Land Use Plan allocates no additional land area for central business districts or large regional shopping centers. Existing facilities are judged to be adequate to serve the State's projected 1990 population. The only increase in commercial land use projected is for a few small regional shopping centers. However, the expected location of these areas is not specified in the Land Use Plan. Similar conclusions are stated for growth in institutional land use. Very few new sites, if any, will be required to supplement existing governmental and institutional landholdings, due to the large amounts of acreage currently being held in reserve. Thus, the Land Use Plan projects that, in general, current commercial/institutional land area will provide adequate services for the State's population in 1990. This does not mean that commercial/institutional fuel use will remain constant for the next 15 years. Rather, as the population increases, larger amounts of current land acreage will be brought into use, i.e., built upon, and central business districts in older core cities will experience increasing redevelopment and renewal, i.e., a higher land use density. Thus, greater utilization of current landholdings will require increased amounts of fuel for space heating.

In the absence of accurate projections of commercial/institutional employment by subcounty areas, population projections for each municipality in 1990 were available to do an Order 1 analysis, as specified in the EPA AQMP Guidelines [12]. Commercial and institutional development generally follows the distribution of population in a region. The principal areas where this assumption can lead to erroneous results are large central business districts or regional shopping centers located in areas of low population density. Such distortions, however, were minimized in the current situation, since the Land Use Plan does not project any new, large commercial or institutional sites. Thus, use of population projections for each municipality provided adequate estimates of growth in commercial/institutional fuel use.

$$COM_i = POP90_i/POP74_i$$

where: COM_i = the 1990 growth factor for commercial/institutional area source fuel use in municipality i

$POP90_i$ = the revised 1990 population projection for municipality i

$POP74_i$ = the current population of municipality i

(3) Industrial Fuel Use. Industrial fuel use in the 1974 emissions inventory is split between point and area sources. Both sets of sources contain industrial process use and boiler combustion sources. In addition, the point sources include all electrical generating stations. Growth factors for these point sources were developed on an individual basis using information regarding planned expansions on file at the DAPC and the Rhode Island Department of Economic Development. One power plant in the current emissions inventory has been identified by the Federal Energy Administration as a candidate facility for future conversion to coal, namely, New England Electric's Brayton Point Plant in Somerset, Massachusetts. This facility in Massachusetts is located very near the Rhode Island border. The EPA AQMP Guidelines [13] recommend the assumption of probable worst-case conditions in projecting future emissions. Since selected units within the Brayton Point Plant can potentially be converted to burning coal, a fuel which typically has a higher sulfur and ash content than oil, all probable coal conversions were assumed in projecting future fuel use.

Industrial area source fuel use in the 1974 emissions inventory was developed by the DAPC by apportioning State fuel totals by industrial acreage in each area source grid square, obtained from land use maps. Prior to apportionment, these fuel totals were adjusted to exclude all residential, commercial/institutional, and point source fuel use.

The development of industrial area source fuel use growth factors required a two-step process. First, the increase in industrial fuel use for the entire State was estimated. Second, this increase was apportioned out to each area source grid square in the State. For the purpose of projecting State fuel totals, projections from the Land Use Plan of manufacturing and nonmanufacturing employment in Rhode Island in 1990 were used. No further breakdown of employment projections by type of industry was available. Even the most recent OBERS projections [14] lacked this type of data. Therefore, as suggested in the EPA AQMP Guidelines [15], projections of manufacturing employment were used to grow industrial process fuel use, and projections of total employment were used to grow industrial boiler combustion fuel use.

Apportionment of the projected increase in State industrial fuel use took account of both the current statewide distribution of industrial fuel use and the distribution projected by the Land Use Plan for 1990. The Plan projects that growth in industrial land use will occur principally in large (more than 50 acre) industrial parks located in the vicinity of existing industrial development. The Land Use Plan provides projections of industrial acreage by municipality in 1990. These projections show that some towns are expected to experience rapid industrial growth, while others, none at all. Although these acreage projections are rounded to the nearest hundred acres, this does not cause a problem in accuracy, since all towns for which significant growth in industrial acreage has been predicted are projected to contain quantities well in excess of a hundred acres. Therefore, industrial acreage projections were used to apportion the projected increase in industrial fuel use to the municipality level, accounting for large-scale changes in industrial fuel use, and the current distribution of fuel use was used to apportion the projected fuel use within each municipality to the area source grid square level. This method of apportionment corresponds to an Order 2 analysis, as specified in the EPA AQMP Guidelines [12].

$$IND_i = FUEL90_i/FUEL74_i$$

where: IND_i = the growth factor for industrial area source fuel use in municipality i

$FUEL90_i$ = the projected 1990 industrial area source fuel use in municipality i

$FUEL74_i$ = the current industrial area source fuel use in municipality i, to be derived from the current area source inventory

$$FUEL90_i = FUEL74_i + (\Delta FUEL * \Delta ACRES_i/\Delta ACRES)$$

where: $\Delta FUEL$ = the projected increase in industrial area source fuel use for the entire State in 1990

$\Delta ACRES_i$ = the projected increase in industrial acreage for municipality i in 1990

$\Delta ACRES$ = the projected increase in industrial acreage for the entire State in 1990

$$\Delta FUEL = FUEL90 - FUEL74$$

where: FUEL90 = the projected 1990 industrial area source fuel use for the entire State

FUEL74 = the current industrial area source fuel use for the entire State, to be derived from the current area source inventory

$$FUEL90 = (BC74 * EMP90/EMP74 + P74 * MEMP90/MEMP74) * C$$

where: BC74 = the current industrial area source Boiler Combustion fuel use for the entire State

EMP90 = the projected 1990 State employment

EMP74 = the current State employment

P74 = the current industrial area source Process fuel use for the entire State

MEMP90 = the projected 1990 State manufacturing employment

MEMP74 = the current State manufacturing employment

C = the 1990 State population adjustment factor

$$C = POPREV/POPLUP$$

where: POPREV = the revised 1990 State population projection

POPLUP = the Land Use Plan 1990 State population projection

(4) Mobile Source Fuel Use

(a) Auto and Diesel. Emissions of sulfur dioxide and particulates from auto and diesel sources in the 1974 area source inventory were determined from estimates of total vehicle miles traveled (VMT) in each area source grid square. As part of a continuing, comprehensive, and coordinated (3-C) transportation planning process in the State of Rhode Island, projections of VMT for 1990 have been developed [5]. Since these projections are not available on a municipality basis, only a statewide auto and diesel emissions growth factor was developed. This growth factor also took account of an expected reduction in VMT due to the Rhode Island Department of Transportation (RIDOT) carpool strategy under the Providence Transportation Control Plan (TCP), viz., a reduction of about 71,000 daily VMT in the State.

$$AUTO = VMT90/VMT74 * (100 - X)$$

where: AUTO = the 1990 statewide auto and diesel emissions growth factor

VMT90 = the projected 1990 total VMT for the State

VMT74 = the current total VMT for the State

X = the percentage VMT reduction statewide in 1990 caused by full implementation of the RIDOT carpool program

(b) Airports. Emissions from airport operations currently occur in only four area source grid squares in the entire State. Air passenger and cargo movements are expected to increase significantly by 1990. No new airports are planned, since existing facilities will meet the projected demand [5]. In the absence of other information concerning future airport emissions, projections of commercial air carrier movements in the State in 1990 from the Land Use Plan were used to develop a statewide growth factor.

$$AIR = AC90/AC74$$

where: AIR = the 1990 growth factor for airport emissions

AC90 = the projected number of air carrier movements in the State in 1990

AC74 = the current number of air carrier movements in the State

(c) Other. Railroad SO_2 and TSP emissions were ignored in the 1974 emissions inventory, since they are insignificant compared to emissions from other categories of sources. Vessel emissions were included in the inventory, but make up much less than one percent of the total for both SO_2 and particulates. Thus, no growth factors were developed for these sources.

b. Results

Sample area source emissions growth factors for projecting the 1974 inventory to 1985 are shown, distributed by municipality, in Table 3-1 for Rhode Island and in Table 3-2 for southeastern Massachusetts. Note that these factors are ratios of projected to existing emissions. Thus, a factor of 1.15 represents an increase in emissions of 15%; a factor of 0.96 represents a decrease in emissions of 4%. A very large growth factor (e.g., 10.185 for distillate oil industrial emissions in the Town of Tiverton) does not necessarily imply a large amount of emissions, just a large percentage increase. Such large increases are projected to occur, in general, in municipalities having very little area source emissions in 1974.

C. PROJECTED FUTURE EMISSIONS

The area source growth factors were programmed into the PL/1 program used to create the area source inventory, and the projected area source inventories for 1978, 1980, and 1985 were produced. These data, along with future projections of point source emissions, then formed the future base case inventories. Summaries of future projected base case emissions and actual 1974 emissions are shown in Tables 3-3 and 3-4, respectively, for point and area sources.

From Tables 3-3 and 3-4, it can be seen that area sources dominate in terms of total TSP emissions, whereas point and area source SO_2 emission totals are comparable. Note that the point source emissions from the two power plants in Somerset, Massachusetts, make up most of the SO_2 point source total. The decline in Rhode Island point source emissions is due principally to the closing of several sources and to the expected compliance of others with State of Rhode Island air pollution regulations. The increase in Massachusetts point source emissions is due to the conversion of the Brayton Point power plant to coal (see Section III.B.1).

TABLE 3-1

AREA SOURCE EMISSIONS GROWTH FACTORS FOR RHODE ISLAND

1974-1985

Municipality	Residential	Industrial			Comm/ Inst.	Motor Vehicles	Air-Ports
		Resid. Oil	Dist. Oil	Nat. Gas			
Barrington	0.945	1.000	1.000	1.000	1.03	1.152	1.44
Bristol	1.117	1.021	1.050	1.017	1.14	1.152	↓
Burrillville	1.344	1.026	1.063	1.021	1.09	1.152	↓
Cent. Falls	2.038	1.021	1.050	1.017	0.97	1.120	↓
Charlestown	1.502	1.500	2.202	1.394	1.19	1.152	↓
Coventry	1.371	1.017	1.041	1.013	1.35	↓	↓
Cranston	1.316	1.025	1.059	1.019	1.11	↓	↓
Cumberland	1.433	1.055	1.131	1.043	1.09	↓	↓
East Greenwich	1.275	1.037	1.089	1.029	1.16	↓	↓
East Providence	0.924	1.028	1.067	1.022	1.14	1.120	↓
Exeter	2.073	1.000	1.000	1.000	1.21	1.152	↓
Foster	1.151	1.000	1.000	1.000	1.23	↓	↓
Glocester	1.227	1.000	1.000	1.000	1.13	↓	↓
Hopkinton	0.921	1.000	1.000	1.000	1.15	↓	↓
Jamestown	1.206	1.209	1.502	1.164	1.09	↓	↓
Johnston	1.186	1.014	1.034	1.011	1.30	↓	↓
Lincoln	1.454	1.070	1.169	1.056	1.07	↓	↓
Little Compton	1.619	1.000	1.000	1.000	1.42	↓	↓
Middle Town	1.007	1.284	1.683	1.223	1.23	↓	↓
Narragansett	2.341	1.221	1.531	1.174	1.17	↓	↓
Newport	1.165	1.228	1.548	1.180	1.07	↓	↓
North Kinstown	1.963	1.149	1.359	1.118	1.67	1.152	↓
North Providence	0.986	1.000	1.000	1.000	1.16	1.120	↓
North Smithfield	1.014	1.000	1.000	1.000	1.13	1.152	↓
Pawtucket	0.921	1.000	1.000	1.000	1.02	1.120	↓
Portsmouth	1.055	1.047	1.113	1.037	1.16	1.152	↓
Providence	1.055	1.011	1.026	1.009	1.03	1.120	↓
Richmond	1.385	1.027	1.065	1.021	1.27	1.152	↓
Scituate	1.172	1.000	1.000	1.000	1.10	↓	↓
Smithfield	1.777	1.083	1.198	1.065	1.17	↓	↓
S. Kingston	1.357	1.093	1.224	1.074	1.10	↓	↓
Tiverton	1.158	4.820	10.185	4.003	1.11	↓	↓
Warren	0.966	1.030	1.072	1.023	1.17	↓	↓
Warwick	1.055	1.041	1.098	1.032	1.13	↓	↓
Westerly	1.839	1.017	1.039	1.013	1.12	↓	↓
W. Greenwich	1.639	1.147	1.352	1.115	1.30	↓	↓
W. Warwick	1.351	1.022	1.053	1.017	1.16	↓	↓
Woonsocket	1.419	1.034	1.081	1.027	1.03	↓	↓
STATE AVG.	1.172	1.030	1.071	1.023	1.12	1.15	1.44

TABLE 3-2

AREA SOURCE EMISSIONS GROWTH FACTORS
FOR SOUTHEASTERN MASSACHUSETTS
1974-1985

Source Category	Municipality Attleboro	 Fall River
Residential	1.24	1.01
Commercial/Institutional	1.24	1.01
Industrial	1.13	0.95
Motor Vehicles	1.15	1.15

TABLE 3-3

ANNUAL POINT SOURCE EMISSIONS IN RHODE ISLAND AND THE ADJOINING PORTION OF SOUTHEASTERN MASSACHUSETTS

Year	Rhode Island		Massachusetts		Total	
	(10^3 metric tons)	(10^3 tons)	(10^3 metric tons)	(10^3 tons)	(10^3 metric tons)	(10^3 tons)
TSP						
1974	10.0	11.0	2.4	2.7	12.4	13.7
1978	5.4	6.0	3.2	3.5	8.6	9.5
1980	4.4	4.9	3.2	3.5	7.6	8.4
1985	1.9	2.1	3.2	3.5	5.1	5.6
SO_2						
1974	12.9	14.2	34.9	38.4	47.8	52.6
1978	11.5	12.6	36.3	40.0	47.8	52.6
1980	10.5	11.5	36.3	40.0	46.8	51.5
1985	8.1	8.9	36.3	40.0	44.4	48.9

TABLE 3-4

ANNUAL AREA SOURCE EMISSIONS IN RHODE ISLAND
AND THE ADJOINING PORTION OF SOUTHEASTERN MASSACHUSETTS

Year	Residential 10^3 metric tons	Residential $\left(\begin{smallmatrix}10^3\\ \text{tons}\end{smallmatrix}\right)$	Commercial/Institutional 10^3 metric tons	Commercial/Institutional $\left(\begin{smallmatrix}10^3\\ \text{tons}\end{smallmatrix}\right)$	Industrial 10^3 metric tons	Industrial $\left(\begin{smallmatrix}10^3\\ \text{tons}\end{smallmatrix}\right)$	Motor Vehicle 10^3 metric tons	Motor Vehicle $\left(\begin{smallmatrix}10^3\\ \text{tons}\end{smallmatrix}\right)$	Airport/Vessels 10^3 metric tons	Airport/Vessels $\left(\begin{smallmatrix}10^3\\ \text{tons}\end{smallmatrix}\right)$	Total 10^3 metric tons	Total $\left(\begin{smallmatrix}10^3\\ \text{tons}\end{smallmatrix}\right)$
TSP												
1974	5.3	(5.9)	2.2	(2.4)	5.7	(6.3)	13.6	(15.0)	0.4	(0.4)	27.2	(30.0)
1978	5.6	(6.2)	2.3	(2.5)	5.9	(6.5)	14.2	(15.7)	0.5	(0.5)	28.5	(31.4)
1980	5.8	(6.4)	2.4	(2.6)	5.7	(6.3)	14.5	(16.0)	0.5	(0.5)	28.9	(31.8)
1985	6.1	(6.8)	2.5	(2.7)	6.0	(6.6)	15.5	(17.1)	0.5	(0.5)	30.6	(33.7)
SO_2												
1974	16.4	(18.1)	10.5	(11.6)	33.0	(36.3)	4.7	(5.2)	4.4	(4.8)	68.0	(76.0)
1978	17.4	(19.2)	11.0	(12.1)	34.1	(37.6)	4.9	(5.4)	4.5	(4.9)	71.9	(79.2)
1980	17.9	(19.7)	11.2	(12.4)	33.0	(36.4)	5.0	(5.5)	4.5	(4.9)	71.6	(78.9)
1985	19.1	(21.0)	11.9	(13.1)	34.2	(37.7)	5.3	(5.9)	4.5	(4.9)	75.8	(82.6)

Table 3-4 shows area source emissions as projected to increase, in general. One decline is noted in the industrial category, from 1978 to 1980. This is due to a projected sharp decline in employment, and hence in industrial area source emissions, in southeastern Massachusetts during this two-year period.

IV. AIR QUALITY MODELING ANALYSIS

A. MODELING FACTORS

The input data requirements for an air quality simulation model can be broadly classified into source factors, site factors, and meteorological factors. Source factors are related to the location and operating characteristics of pollutant emission sources. These factors include source type designation (viz., point or area), pollutant emission rates, stack height, stack gas temperature and exit velocity, and other design parameters. Site factors include the effect of terrain features and the location of sensitive receptor points relative to the emission sources.

It is generally agreed that the meteorological factors directly involved in predicting pollutant concentrations are transport and dilution by the mean wind and dispersal by atmospheric turbulence [16]. These meteorological parameters exhibit important time and space variations, particularly in the lower several thousand feet, where air pollution problems are most strongly related to the vertical thermal structure of the atmosphere in this boundary layer. During conditions of an unstable atmospheric thermal structure, both horizontal and vertical dispersion of pollutants is enhanced, whereas in stable atmospheres, the reverse conditions apply. Consequently, the thermal stability of the ambient air is an important controlling factor in determining the dispersion properties in a given region.

Another important meteorological parameter is the vertical thickness of the atmospheric layer in which turbulent mixing can diffuse the emissions. Deeper mixing depths will permit a pollutant to be dispersed into larger volumes, resulting in lower ground-level concentrations. Under certain meteorological conditions, principally low-level temperature inversions, this thickness can be severely limited--thereby trapping pollutants within a shallow layer near the ground. The mixing depth within a region generally varies both with the season and with the time of day.

Thus, the dispersion properties of the atmosphere at any particular time can be described in terms of the joint occurrence of specific conditions of thermal stability, mixing depth, and wind. These meteorological factors are highly interrelated and are observed to occur in combinations of different conditions with varying frequency.

B. DESCRIPTION OF ATMOSPHERIC DIFFUSION MODEL

1. General

Successful application of generalized diffusion models to specific emission sources requires definition of the source characteristics. The air quality modeling work undertaken in the current study required an atmospheric transport and diffusion model capable of predicting annual average SO_2 and TSP concentrations at specified receptor points due to an array of both point and area emissions sources. In addition, the reactive nature of SO_2 necessitated the use of a model which could simulate pollutant decay processes as a function of atmospheric residence time. The Rhode Island Division of Air Pollution Control (DAPC) requested the use of the Climatological Dispersion Model (CDM) in the current study. This model, developed by EPA, meets the above criteria. All predicted SO_2 and TSP concentrations for the Rhode Island air quality maintenance analysis were determined using the CDM [17], which is based on the Gaussian plume configuration.

The basic Gaussian model simulates atmospheric transport and diffusion processes by assuming the concentrations of pollutants downwind within a plume generated by point and area source emissions can be represented by a Gaussian distribution in both the crosswind and vertical directions. Emissions sources are assumed to be continuous for the time analyzed. As the plume expands due to diffusion and turbulence, it is diluted and transported downwind, principally by the mean wind. The rate of expansion is characterized by a series of empirical dispersion curves which are dependent on the stability of the atmosphere, as determined in studies made by Pasquill [16] and reported by Turner [18].

The CDM differs in many respects from the Air Quality Display Model (AQDM), which has been used extensively for simulation purposes. Although both are Gaussian plume models that predict only long-term pollutant concentrations, the CDM determines emission contributions from area sources more accurately than AQDM, using numerical intergration techniques. Effective emission heights for point sources are also calculated more accurately in CDM through utilization of the well-accepted Briggs plume rise formulae. Finally, the CDM allows a realistic stability-dependent power law increase in wind speed with height that is lacking from AQDM. A validation study conducted recently at the National Environmental Research Center [19] has shown that the CDM yielded smaller errors than the AQDM, with concentration maxima and means nearer those of the measured data.

The CDM accepts as input the joint frequency distribution of meteorological conditions, the locations and emission rates of both area and point sources, and the locations of the desired receptor points. At each receptor, the concentration due to each point and area source is calculated. These calculations assume transport and diffusion processes which represent the frequency distribution of meteorological conditions input to the model. The model can simulate up to 576 different meteorological conditions through various combinations of six wind speed classes, six atmospheric stability classes, and sixteen wind directions. The annual concentration at each receptor is then calculated as the sum of all the individual source concentrations. A complete description of the diffusion and plume rise equations used in the model calculations is given in the CDM User's Guide [17].

2. Model Modifications

Two modifications were made to the CDM in order to allow for representation of stable atmospheric dispersion conditions and to update the Briggs plume rise formulae to account for these conditions. These modifications were approved by EPA and the DAPC.

The CDM model computes concentrations at receptor points which are assumed to be located in urban areas. The lower layer of the urban atmosphere is generally more unstable than the corresponding adjacent rural atmosphere. In fact, the turbulence and heating present in the lower urban atmosphere precludes the occurrence of stable atmospheric conditions associated with nighttime radiational cooling in the rural environment. To account for this effect, the CDM uses empirical dispersion coefficients associated with less stable atmospheric conditions in computing pollutant concentrations. While this procedure is correct when both receptor and source are located within the urban environment, it was felt that some adjustment was necessary in order to model the rural portion of the Metropolitan Providence AQMA. Rural receptors are by definition located far from the urban core, and the travel time from the source to the receptor is dominated by the rural component. Thus, in calculating pollutant concentrations at rural receptor sites, the dispersion of emissions was determined using the empirical dispersion coefficients of Pasquill [16] directly, without adjustments for the urban environment. This allowed modeling of stable atmospheric conditions when applicable in the rural environment.

The Briggs plume rise formulae used in the CDM were updated to include equations for plume rise under stable atmospheric conditions [20, 21].

3. Input Data

The input data requirements for the CDM, classified by category, included:

Source Factors

- Source type designation
- Source location and width
- SO_2 and TSP emission rates
- Stack height and diameter
- Stack gas temperature and exit velocity

Site Factors

- Receptor location
- Receptor type description (urban or rural)

Meteorological Factors

- Joint frequency distribution of wind speed, wind direction, and atmospheric stability
- Average afternoon and nocturnal mixing heights

- Mean ground-level atmospheric temperature
- Decay half-life of SO_2

The Rhode Island point and area source emission inventories, discussed in Section III, provided all the necessary source factor data for input to the model. Receptor site locations were specified to correspond to air quality measurement sites for the model validation and to an array that covered the Metropolitan Providence AQMA for the future modeling runs.

The basic meteorological input to the model consisted of "STAR" data from the National Climatic Center (NCC) in Asheville, North Carolina. Weather observations for Providence, Rhode Island (Station #14765) are taken hourly by the National Weather Service (NWS) at Green Airport. These data, aggregated to eight observations per day and distributed as STAR data, are representative of the meteorological conditions for the State of Rhode Island. The result is a joint frequency distribution which gives the joint frequency of occurrence of a wind direction sector, wind speed class, and stability class. There are 576 entries in the table for the joint frequency distribution, resulting from the 16 different wind direction sectors, the 6 wind speed classes, and the 6 atmospheric stability classes. For the model validation, in which predictions of annual concentrations of SO_2 and TSP in 1974 were made, the 1974 annual STAR data were used as input to the CDM model. To model future years, a 10-year climatological average STAR data set for 1964-1973 was used. Wind roses for these two sets of meteorological data are shown in Figures 4-1 and 4-2, respectively, spatially depicting the frequency of occurrence of wind from each direction. The two wind roses are, in general, comparable. The most significant difference is a larger component of N and NNE winds in 1974 compared to the climatological average data.

The annual average afternoon and nocturnal mixing heights used in the model for Rhode Island were, repsectively, 804 and 707 meters. These values are based on a five-year record (1960-1964) of upper-air temperature soundings taken at the nearest NWS station with this capability in Nantucket, Massachusetts [22]. The mean atmospheric temperature used was 11° C, based on NWS records for Providence, Rhode Island; the assumed half-life for SO_2 was 0.5 hours.

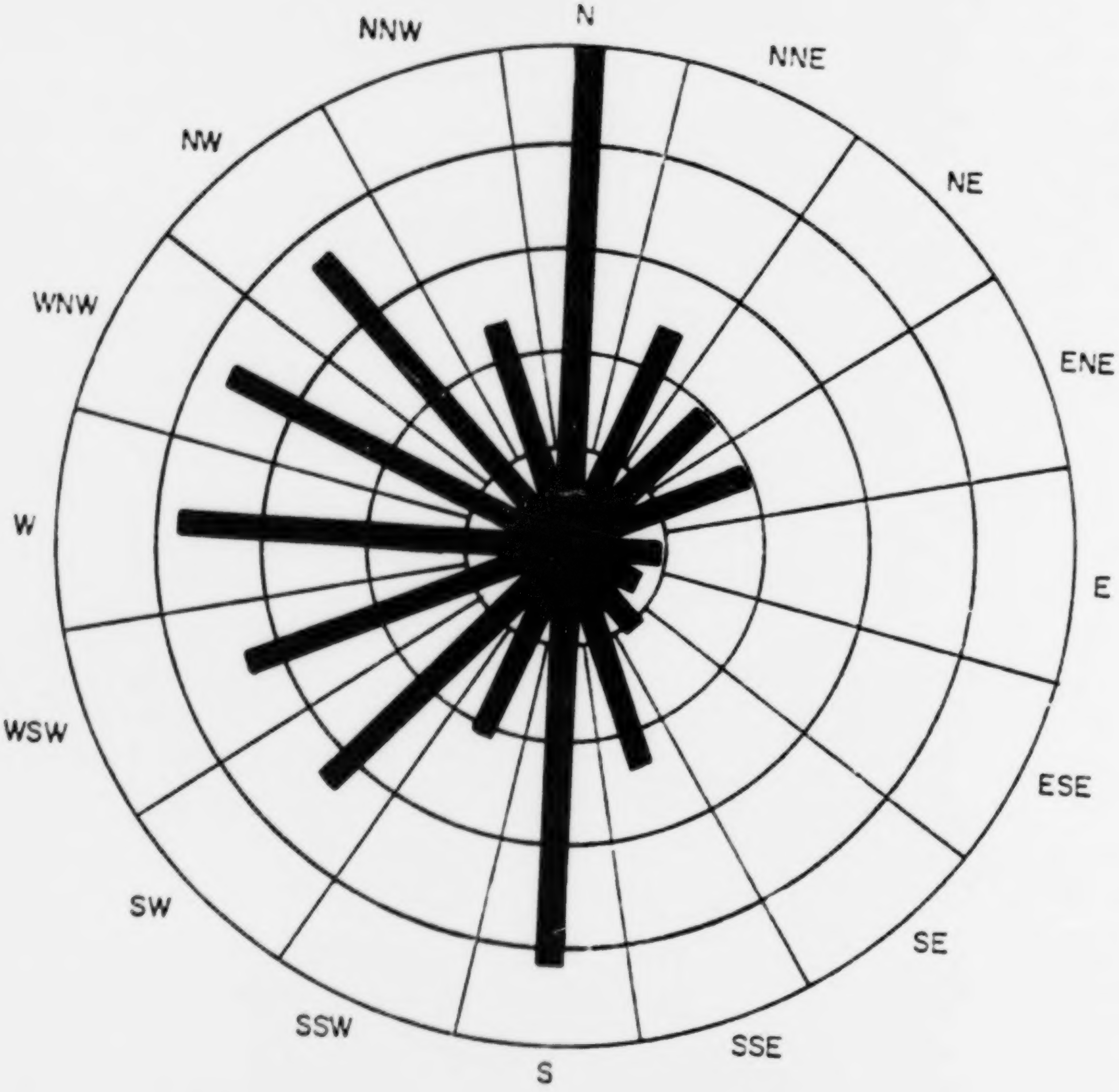


Figure 4-1. Wind Rose for Providence, Rhode Island, in 1974

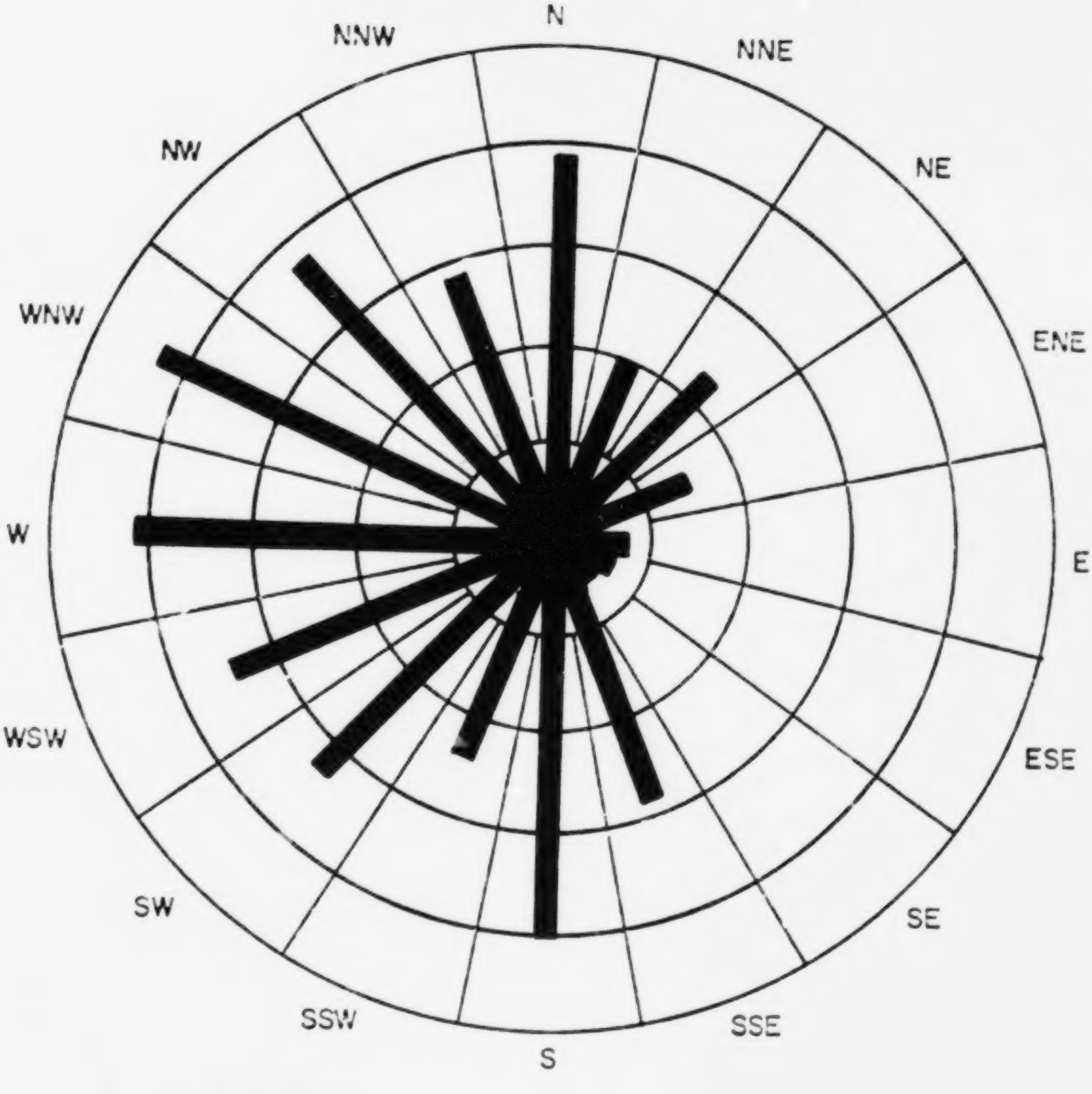


Figure 4-2. Wind Rose for Providence, Rhode Island,
Ten-Year Average (1964-1973)

C. MODEL VALIDATION

For the purpose of verifying the accuracy of the Climatological Dispersion Model (CDM) in predicting annual average SO_2 and TSP concentrations for the State of Rhode Island, a model validation exercise was performed. This validation consisted of comparing air quality model predictions for 1974 with actual 1974 annual concentrations measured at 22 intermittent and continuous monitoring stations. The location of these sampling stations, along with the measured and predicted concentrations for SO_2 and TSP, are shown in Table 4-1. The units of measurement are micrograms per cubic meter. The measured data are from EPA's SAROAD data file.

As a result of a review of the air quality monitoring data, the State of Rhode Island DAPC judged some of the data to be nonrepresentative of the ambient air quality in the sampling areas. Therefore, the DAPC specified that these data be excluded from the model validation. SO_2 monitoring data from two sites, Pawtucket City Hall and the National Weather Service in Warwick, were excluded by the DAPC because the measured SO_2 concentrations for these sites are far below the levels predicted by the model. TSP monitoring data for the Dyer Street entrance to Interstate 195 in Providence were also excluded. Due to the poor location of this site, salt, sand, and other particulates are picked up directly by the monitoring equipment. This probably accounts for the measured TSP levels at this site, which are twice as high as those predicted by the model.

Scatter diagrams of measured versus predicted 1974 annual average concentrations of SO_2 and TSP are shown, respectively, in Figures 4-3 and 4-4. The data points excluded from the model validation are circled in both figures. The correlation coefficients (r) between measured and predicted values are 0.86 and 0.78, respectively, for SO_2 and TSP, i.e., good correlation. These values may also be interpreted quantitatively, since r^2 is equal to the percentage of the variance of the predicted concentrations that can be accounted for by a linear relationship with the measured concentrations [23]. These values are 74% and 61%, respectively, for SO_2 and TSP.

TABLE 4-1

MEASURED AND PREDICTED 1974 ANNUAL AVERAGE SO_2 AND TSP CONCENTRATIONS IN RHODE ISLAND

Site Location		SO_2 (µg/m³)*		TSP (µg/m³)**	
		Measured	Predicted	Measured	Predicted
Providence	State Office Building	69[+]	80	63	43
Pawtucket	City Hall	14[++]	67	48	34
Burrillville	Burrillville High	—	—	31	4
Woonsocket	City Hall	27	26	49	15
Bristol	Reynolds School	—	—	38	13
Tiverton	Police Department	—	—	41	13
Newport	City Hall	26	12	39	8
Cranston	Police Department	14	26	54	23
Warwick	National Weather Service	8[++]	34	56	28
Westerly	Police Department	11	11	49	5
Providence	Westminster Street	50	81	68	44
North Kingston	Quonset Point	12	9	33	9
Providence	Dyer Street	73[+]	85	88[++]	45
East Providence	HOD Realty	31	54	—	—
East Providence	Tristram Burges School	35	53	61	33
Cranston	General Hospital	30	68	45	41
East Providence	High School	33	46	63	31
Providence	St. Joseph's Hospital	36	76	46	42
Narragansett	Junior High School	19	4	30	8
Providence	Police Station	46	78	66	42
East Providence	Central Junior High School	—	—	49	33
Washington County	Arcadia Fire Headquarters	13	1	23	3

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* Annual arithmetic mean concentration

** Annual geometric mean concentration

[+] Continuous monitoring station

[++] Excluded from model validation and calibration

Figure 4-3. Comparison of Measured and Predicted 1974 Annual SO_2 Concentrations

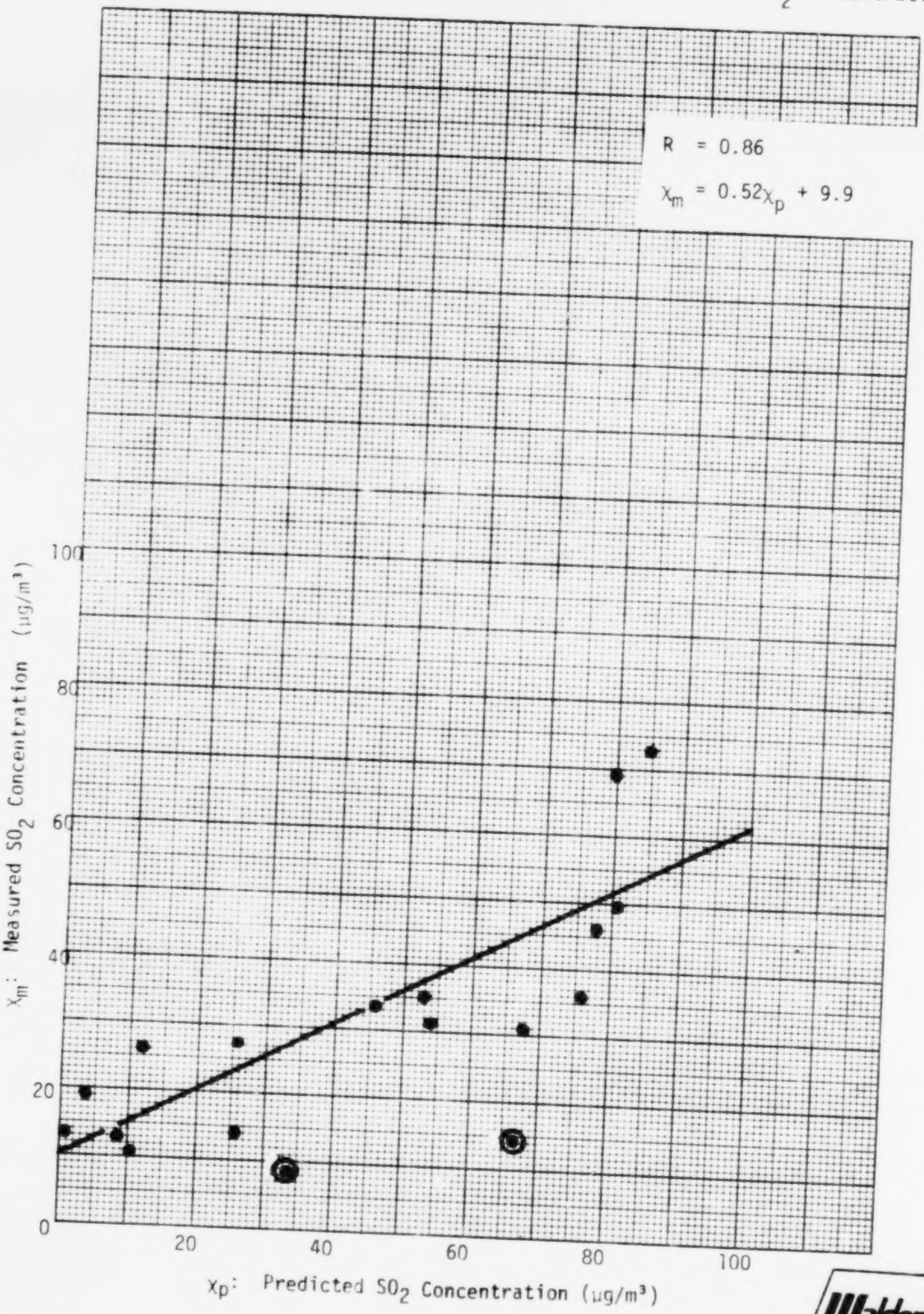

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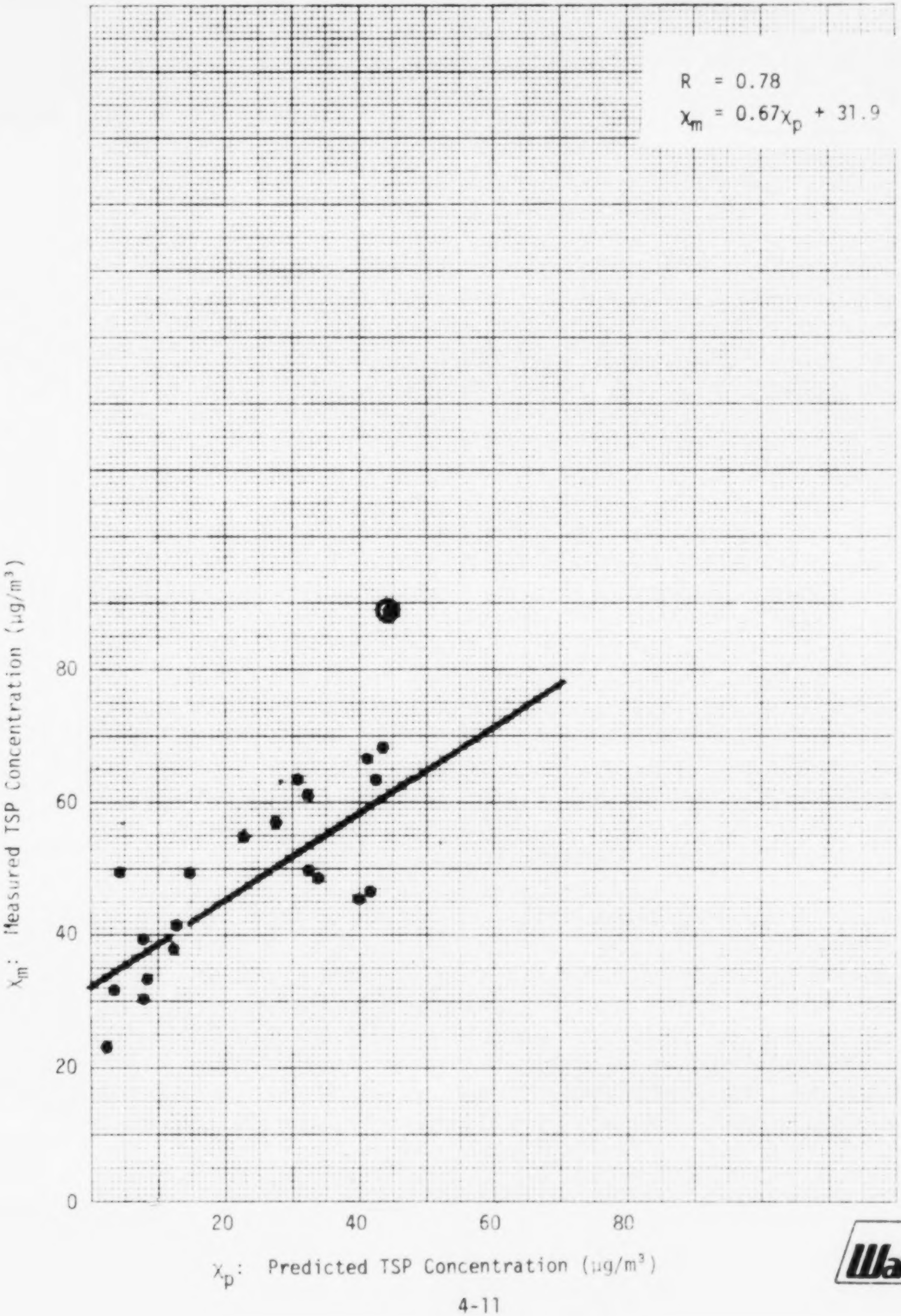
Figure 4-4. Comparison of Measured and Predicted 1974 Annual TSP Concentrations



The remaining percentage (26% and 39%) is referred to as the error variance, due to other factors. The error variance can be due to any of the following:

- Precision of the atmospheric diffusion model
- Precision of the point and area source emission inventories
- Representativeness of the annual meteorological data
- Errors in the air quality monitoring data

The standard errors of estimate for the linear regression relationships were found to be 10.0 μg/m^3 and 8.3 μg/m^3, respectively, for SO_2 and TSP.

D. MODEL CALIBRATION

The purpose of a calibration is to adjust the model estimates based on the relationship between measured (χ_m) and predicted (χ_p) concentrations determined from the model validation. This is accomplished by a linear regression on the validation data whose slope and intercept are then used as correction factors in making future predictions.

Referring to the scatter diagram for SO_2 in Figure 4-3, the linear regression line of best fit was found to be $\chi_m = 0.52\chi_p + 9.9$ by the method of least squares. Referring to Figure 4-4 for TSP, the linear regression line was found to be $\chi_m = 0.67\chi_p + 31.9$. These equations were used to calibrate the model for all future modeling predictions. Note that both lines have a positive intercept. There are three possible physical interpretations of these intercepts: (1) background pollutant concentrations, (2) systematic bias in the measured data, and (3) systematic bias in the model predictions. For particulate matter, 31.9 μg/m^3 is a reasonable background level, supported by the lowest measured annual average TSP value in the State in 1974 of 23 μg/m^3 in Washington County (see Table 4-1). For SO_2, a background level of 9.9 μg/m^3 could be due to transport from nearby large urban areas, i.e., Boston, Worcester, and Hartford. This is supported by the lowest measured annual average value in the State in 1974 of 11 μg/m^3, in the Town of Westerly.

E. FUTURE BASE CASE AIR QUALITY

Concentration isopleths from the calibrated modeling predictions of air quality in the base year of 1974 are shown in Figure 4-5 and 4-8, respectively, for SO_2 and TSP. The modeling predictions indicate that the annual primary air quality standards (80 $\mu g/m^3$ for SO_2 and 75 $\mu g/m^3$ for TSP) were not exceeded during 1974. These results agree with the actual ambient monitoring data for 1974 used in the model calibration (see Table 4-1). The model does predict, however, that the secondary standard (60 $\mu g/m^3$) for particulates was exceeded in the City of Providence; this is also substantiated by the ambient monitoring data for 1974.

The future annual SO_2 and TSP levels in the Metropolitan Providence AQMA were predicted by the CDM for the years of 1978, 1980, and 1985, utilizing:

- The projected point and area source emission inventories, discussed in Section III.C, and
- The ten-year climatological average STAR data set of meteorological conditions.

The resulting concentration isopleths for the base case in 1978 and 1985 are shown in Figures 4-6 and 4-7 for SO_2 and in Figures 4-9 and 4-10 for TSP. The concentrations for 1980 were practically indistinguishable from those for 1978 and so were not plotted. Note that there are shifts in the location of the concentration isopleths between the years of 1974 and 1978. These changes are probably due to the differences between the one-year 1974 meteorological data used in predicting 1974 air quality levels (see Figure 4-1) and the ten-year average meteorological data used in predicting future air quality (see Figure 4-2). The joint frequency distribution of meteorological conditions over ten years smooths out many of the anomalous combinations of wind direction, wind speed, and stability classes that occur in a particular year.

The modeling results indicate that future ambient air quality levels of SO_2 will not exceed the annual primary air quality standard for SO_2 of 80 $\mu g/m^3$ in the AQMA through 1985. The maximum predicted annual average concentration was 54 $\mu g/m^3$ in the City of Providence in 1985. Even accounting

Figure 4-5. Predicted 1974 Annual Average SO_2 Concentrations in Rhode Island ($\mu g/m^3$)

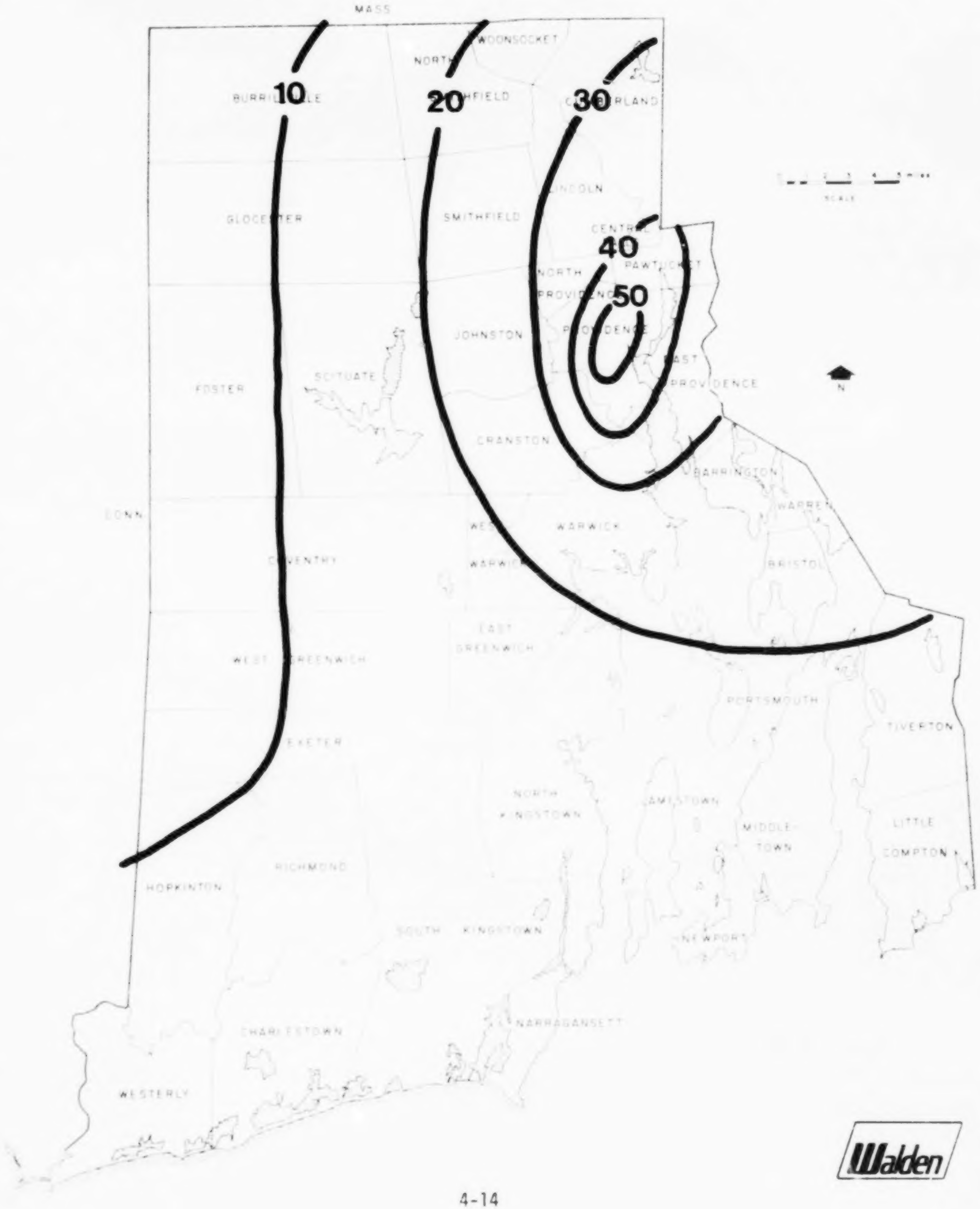

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Figure 4-6. Predicted Base Case 1978 Annual Average SO_2 Concentrations in Rhode Island ($\mu g/m^3$)

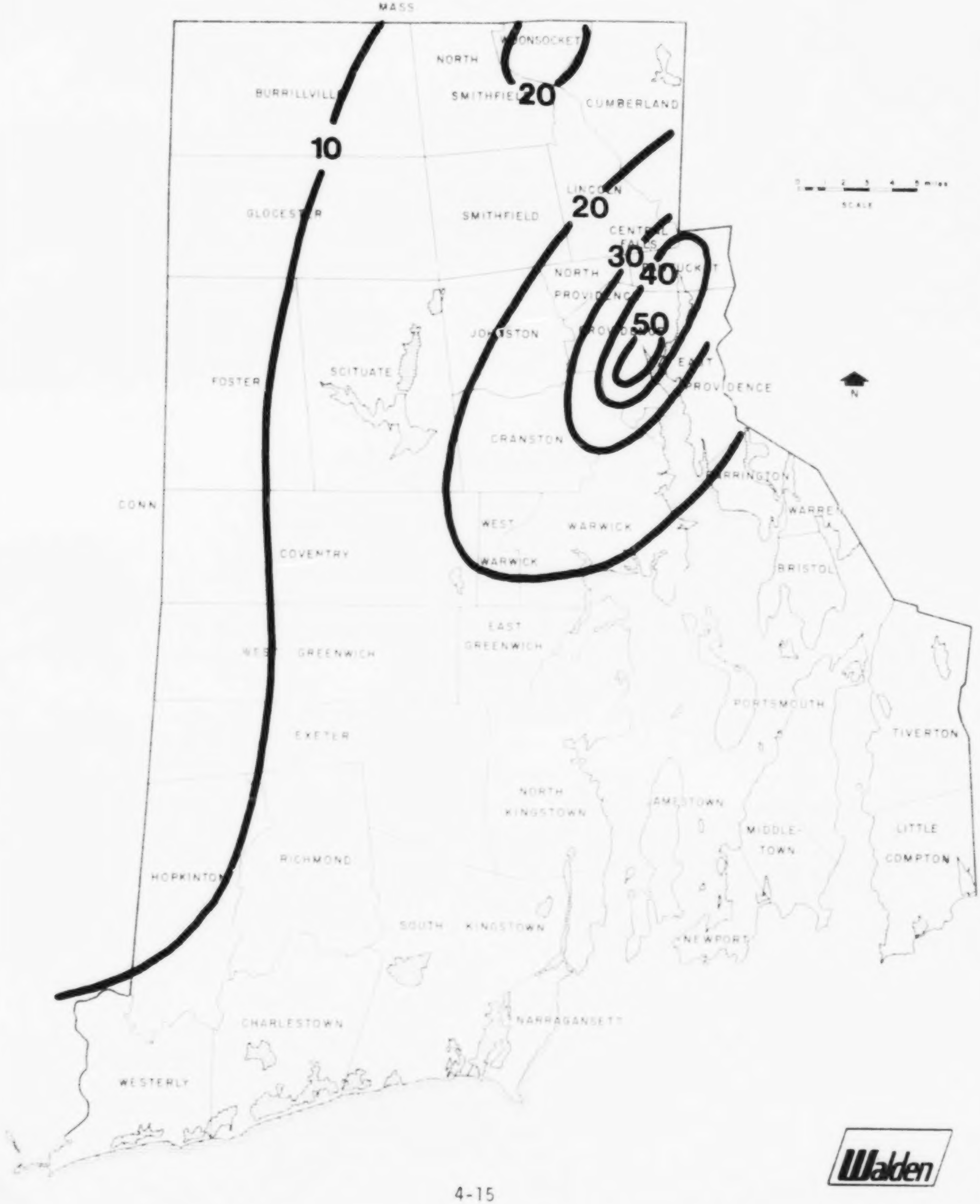
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Figure 4-7. Predicted Base Case 1985 Annual Average SO_2 Concentrations in Rhode Island (μg/m³)

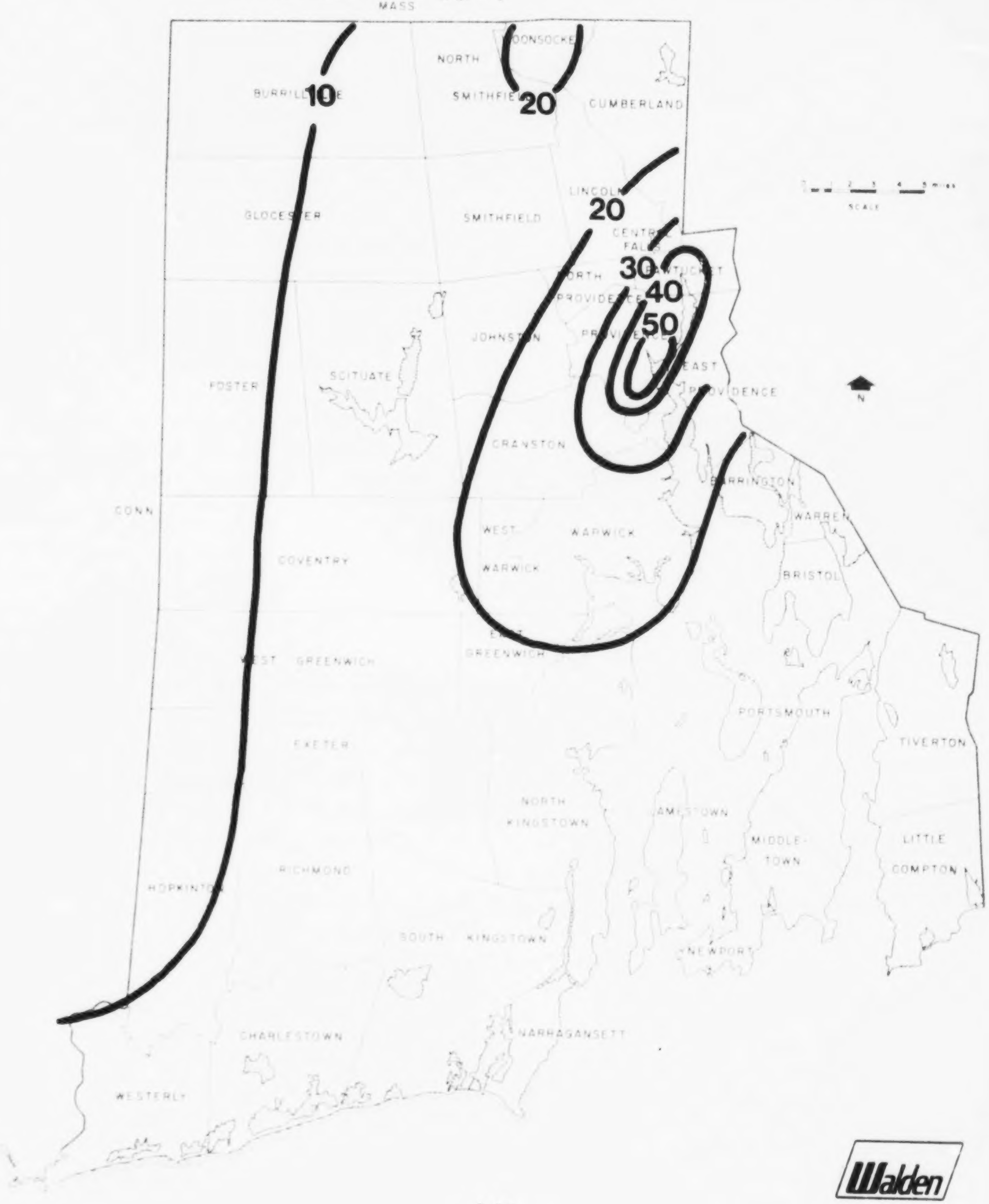
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Figure 4-8. Predicted 1974 Annual Average TSP Concentrations in Rhode Island (μg/m³)

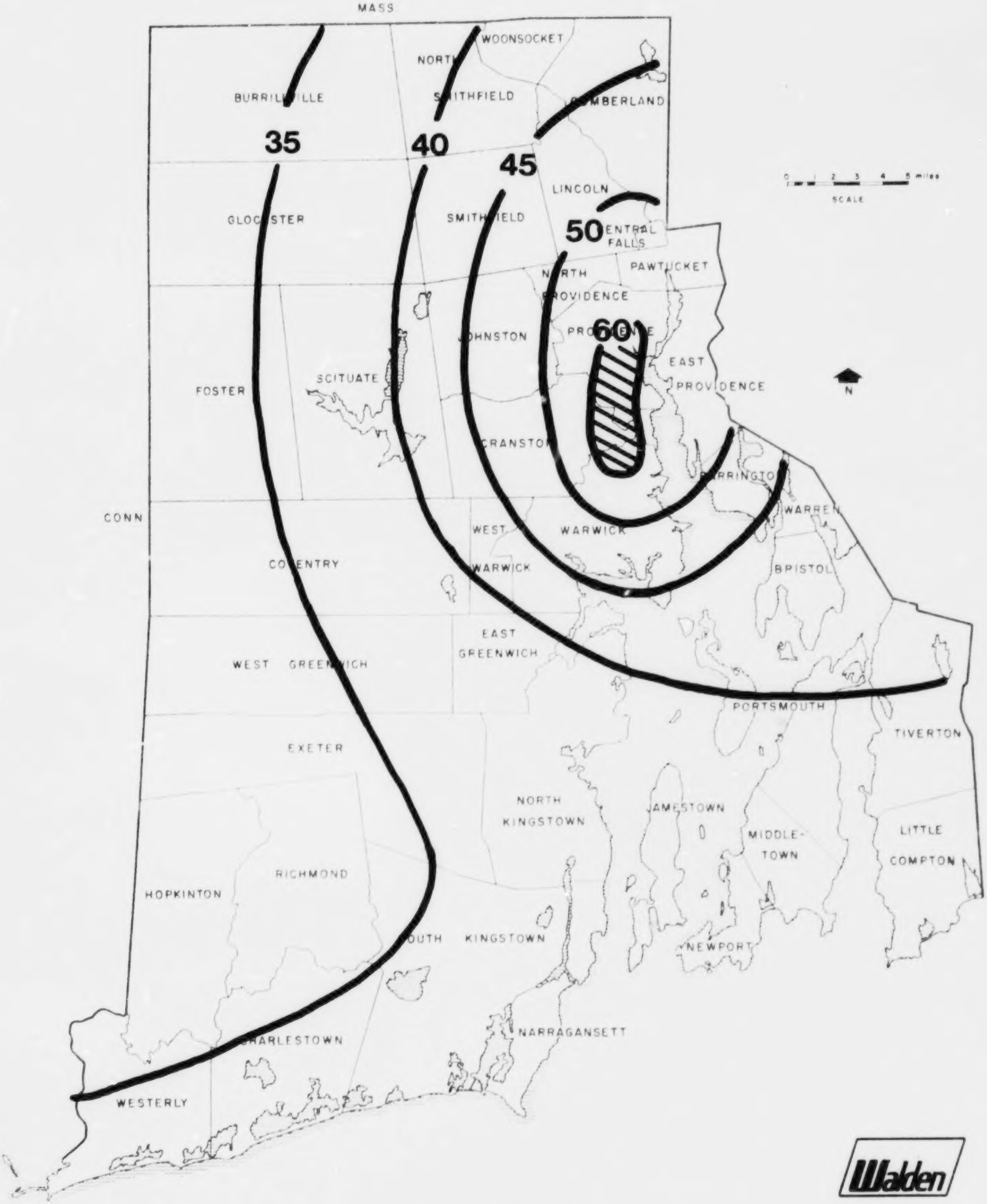
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Figure 4-9. Predicted Base Case 1978 Annual Average TSP Concentrations in Rhode Island ($\mu g/m^3$)

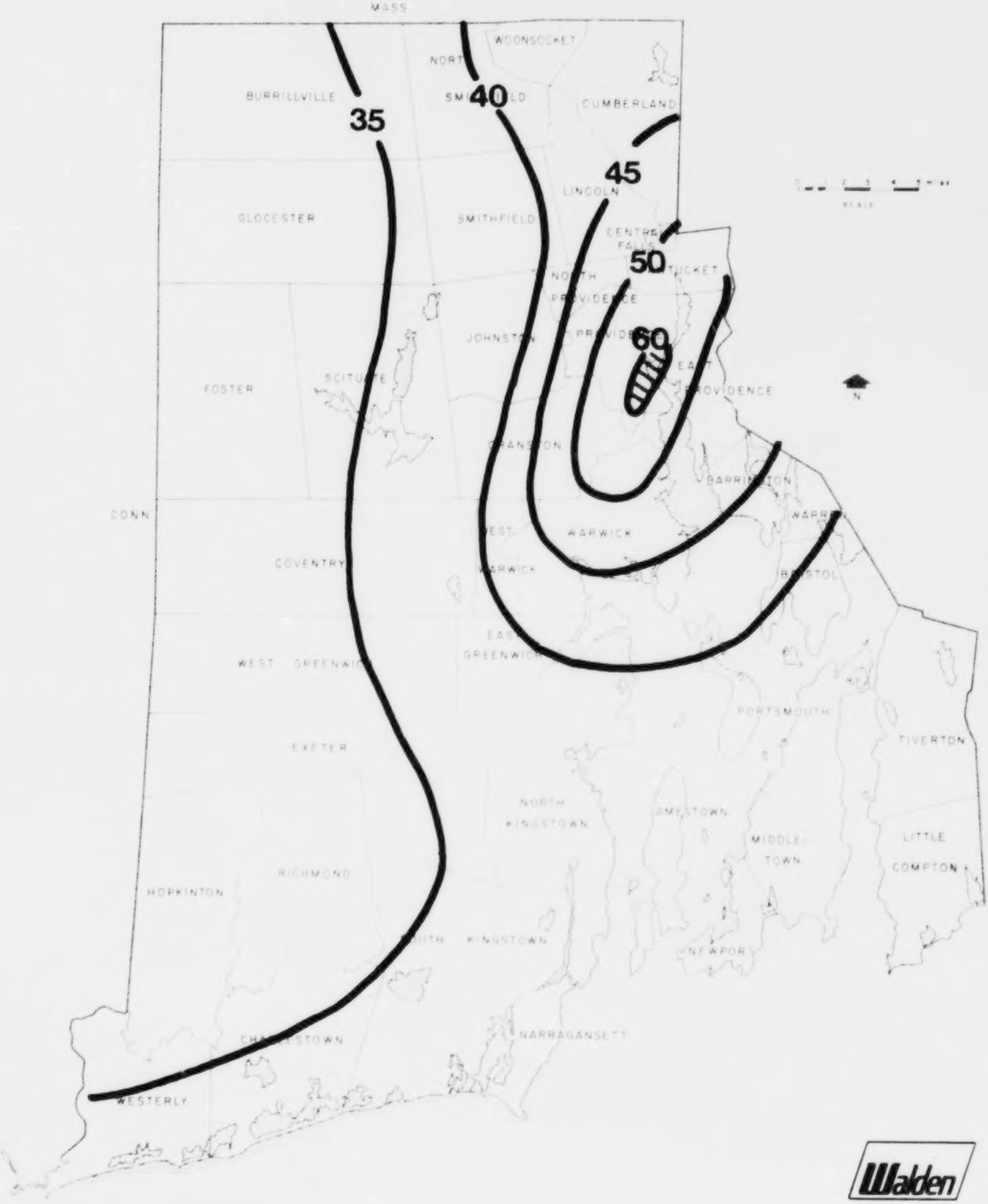
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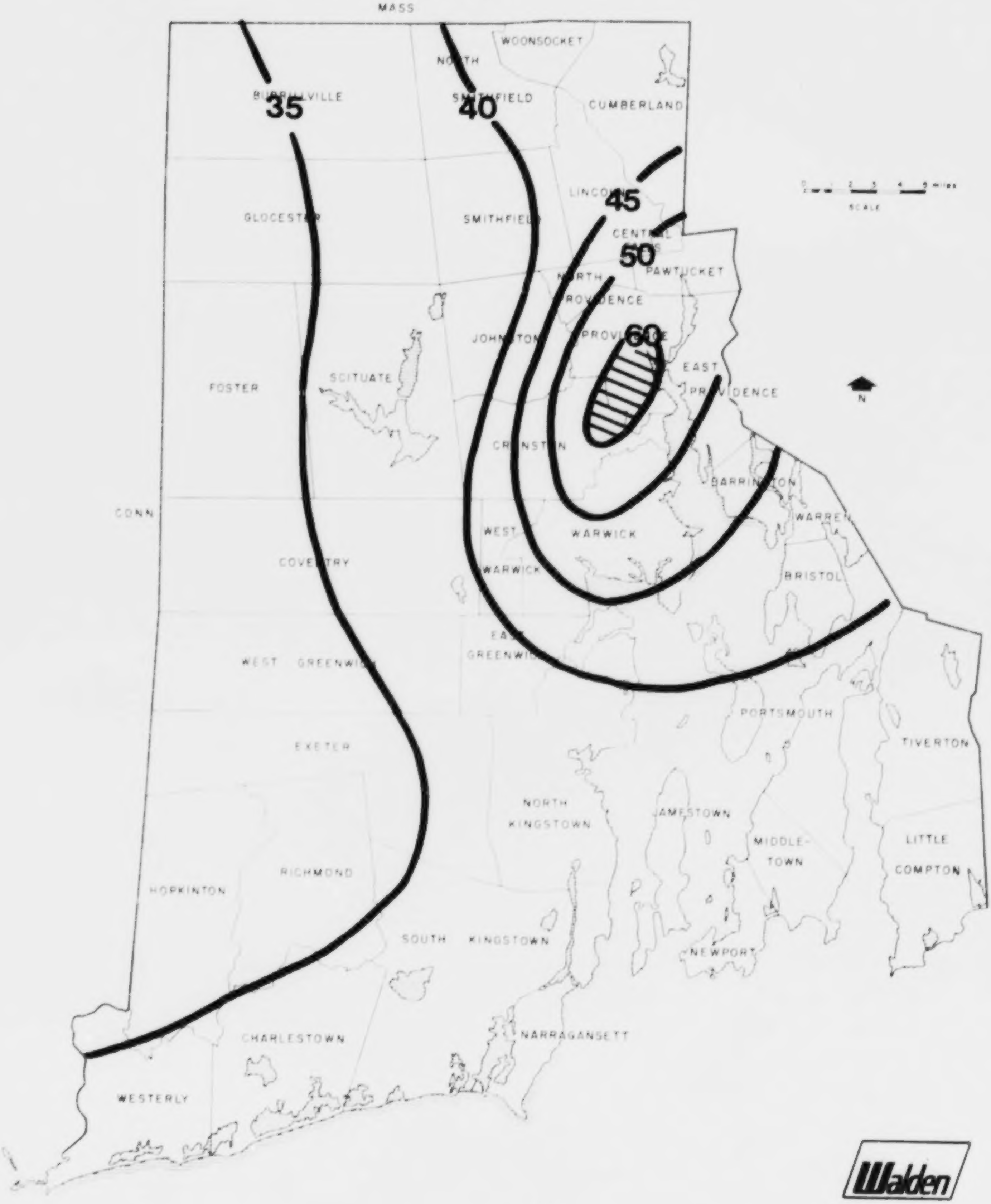
Figure 4-10. Predicted Base Case 1985 Annual Average TSP Concentrations in Rhode Island ($\mu g/m^3$)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for the standard error of estimate of the SO_2 model predictions of 10.0 $\mu g/m^3$, this value is well within the standard. Maximum predicted values for all years are summarized in Table 4-2. There are no annual secondary air quality standards for SO_2.

Future total suspended particulate (TSP) levels are also predicted not to exceed the annual primary standard of 75 $\mu g/m^3$. However, TSP levels are predicted to exceed the annual secondary standard of 60 $\mu g/m^3$ by 1.4 $\mu g/m^3$ in the City of Providence in 1985. It should be noted that this increment is less than the standard error of estimate of the model calibration of 8.3 $\mu g/m^3$. Maximum predicted values for all years are again summarized in Table 4-2. Based on these results, a minimum 5 percent decrease in particulate emission rates in the Metropolitan Providence area is necessary by 1985 to avoid exceeding the annual secondary TSP standard in the areas noted in Figures 4-9 and 4-10.

Figures 4-8 and 4-9 show a drop in predicted TSP concentrations between 1974 and 1978. This can be attributed principally to the closing of several large particulate point sources and the expected compliance of others with State of Rhode Island air pollution regulations (see Sections III.B.1 and III.C). Area sources make the largest contribution to predicted maximum TSP concentrations shown in Figures 4-7 through 4-9. Area source contribution rose from 85 percent of the total in 1974 to 93 percent in 1985. This rise was due to the above-mentioned decline in point source emissions and the simultaneous growth in area source emissions (see Tables 3-3 and 3-4). Thus, the most effective strategies to maintain TSP standards in the AQMA will be those that focus on controlling area source particulate emissions.

The annual secondary TSP standard of 60 $\mu g/m^3$ is to be used only as a guide in assessing implementation plans to achieve the 24-hour secondary standard of 150 $\mu g/m^3$ (see Table 1-1). An analysis was undertaken to extrapolate statistically the future predicted base case annual average TSP concentrations to 24-hour maximum values, using the techniques of Larsen [24]. The purpose of this analysis was to verify that the predicted TSP levels exceeding the annual secondary TSP standard in the AQMA imply violations of the 24-hour secondary standard and hence the need for air quality maintenance

TABLE 4-2

MAXIMUM PREDICTED ANNUAL AVERAGE SO_2 AND TSP CONCENTRATIONS IN THE METROPOLITAN PROVIDENCE AQMA FOR THE YEARS 1974, 1978, 1980, AND 1985

Year	SO_2 ($\mu g/m^3$)	TSP ($\mu g/m^3$)
1974	54	62
1978	54	60
1980	54	60
1985	54	61

measures to further control particulate emissions.

In order to extrapolate a 24-hour maximum concentration from a predicted annual geometric mean concentration, a value for the standard geometric deviation (S_g) of the 24-hour concentrations is required. For this purpose, the ambient TSP concentrations measured in the State of Rhode Island in 1974 were analyzed to obtain an average value for S_g. The annual average concentrations listed in Table 4-1 are based on from 20 to 58 24-hour measurements, depending on the receptor site. In order to force the measured concentration data to a log-normal distribution, as required for Larsen's techniques, the standard geometric deviation at each receptor site listed in Table 4-1 was calculated using the following formula:

$$S_g = (c/m)^{1/z}$$

where: c = maximum 24-hour TSP concentration measured in 1974

m = annual geometric mean TSP concentration measured in 1974

z = a function of the number of 24-hour measurements used in computing m

The values for z were determined from tables prepared by Larsen [24]; they ranged from 1.84 (for 20 measurements) to 2.32 (for 58 measurements).

The standard geometric deviations of measured TSP concentrations were found to range in value from 1.30 at the East Providence High School site to 2.00 at the Arcadia Fire Headquarters in Washington County, with a mean value of 1.53. Since no pattern could be found in the calculated S_g values related to geographical location, the mean value of 1.53 was used in developing a scaling factor for obtaining 24-hour maxima from annual geometric means. Note from Table 1-1 that the secondary 24-hour TSP standard is not to be exceeded more than once per year. Thus, in order for a violation of the standard to occur, the second highest 24-hour TSP concentration in a given year must exceed 150 $\mu g/m^3$. Larsen's statistical techniques were used to predict such values as follows:

$$c_p = m_p * (S_g)^z$$

where: c_p = predicted second highest 24-hour TSP concentration in a future year

m_p = annual geometric mean TSP concentration predicted by the CDM in a future year

S_g = 1.53, the mean standard geometric deviation

z = 2.64, the value corresponding to the second highest 24-hour concentration in a year.

Or, equivalently,

$$c_p = 3.07 * m_p$$

Using the CDM predictions of annual average TSP concentrations in 1978, 1980, and 1985 and the scaling factor of 3.07, predicted second highest 24-hour TSP concentrations were obtained for the Metropolitan Providence AQMA in 1978, 1980, and 1985. The resulting concentration isopleths for 1978 and 1985 are shown in Figures 4-11 and 4-12, respectively. The results show a predicted violation of the 24-hour secondary TSP standard (150 $\mu g/m^3$) in both 1978 and 1980 in the Metropolitan Providence area, with values as high as 188 $\mu g/m^3$ in downtown Providence. It should be noted, though, that due to the small number of measurements from which S_g was computed, the resultant 24-hour concentrations are probably overestimated. Nonetheless, Figures 4-11 and 4-12 provide clear evidence of predicted violations of the 24-hour secondary TSP standard.

These results indicate that further control of particulate emissions in the Metropolitan Providence AQMA will be necessary to maintain ambient air quality standards for TSP through 1985. The next section deals in part with air quality maintenance strategies to achieve this goal.

F. EVALUATION OF AIR QUALITY MAINTENANCE STRATEGIES

Projections of future base case air quality in the Metropolitan Providence AQMA through 1985 indicate the need for additional control of particulate emissions to maintain the annual secondary TSP standard of 60 $\mu g/m^3$. The control strategies specified by the DAPC and the EPA for inclusion in the analysis were:

1. An annual inspection and periodic maintenance program for all large industrial, commercial, and institutional boilers

Figure 4-11. Predicted Base Case 1978 Second-Highest 24-Hour TSP Concentrations in Rhode Island ($\mu g/m^3$)

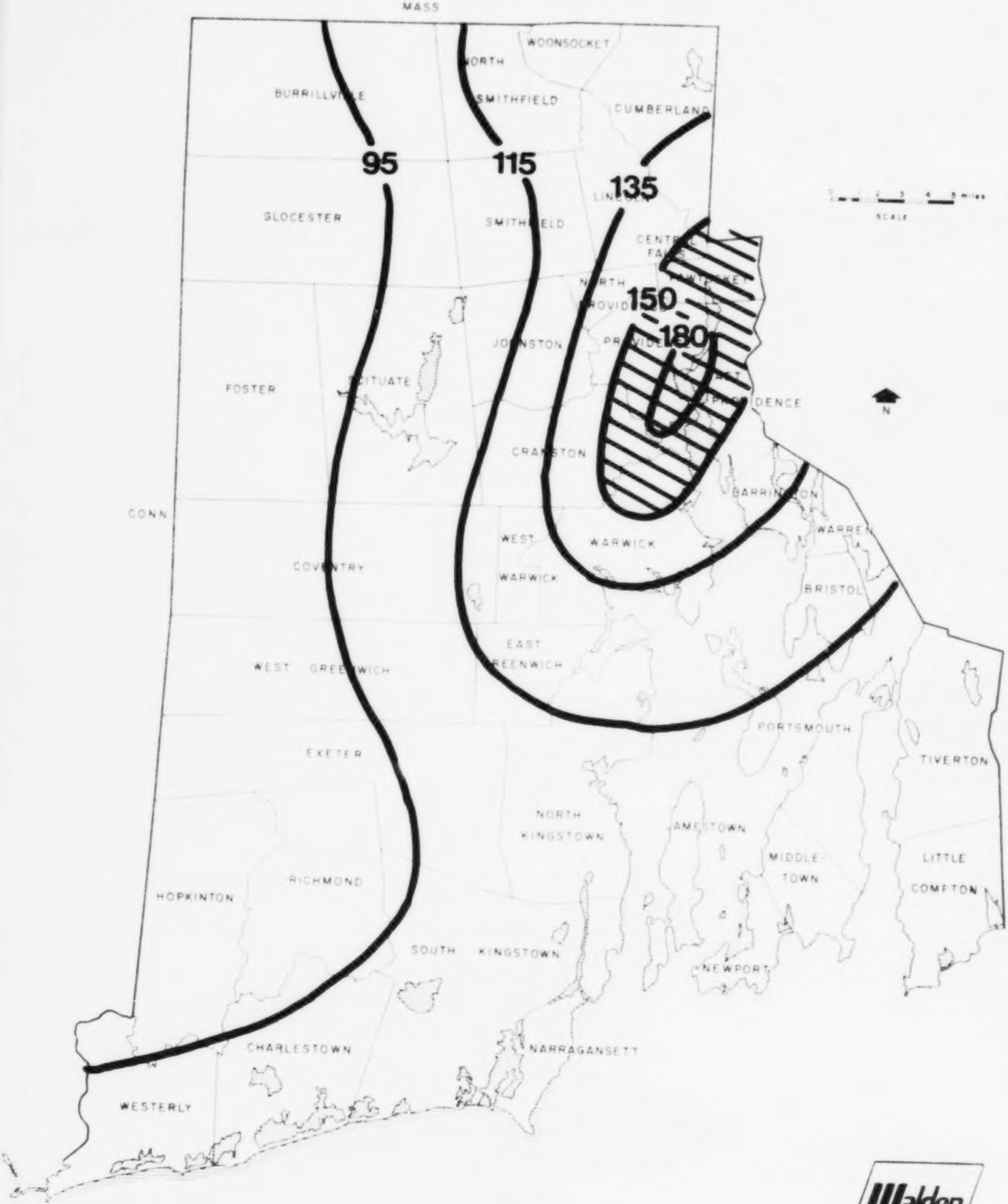
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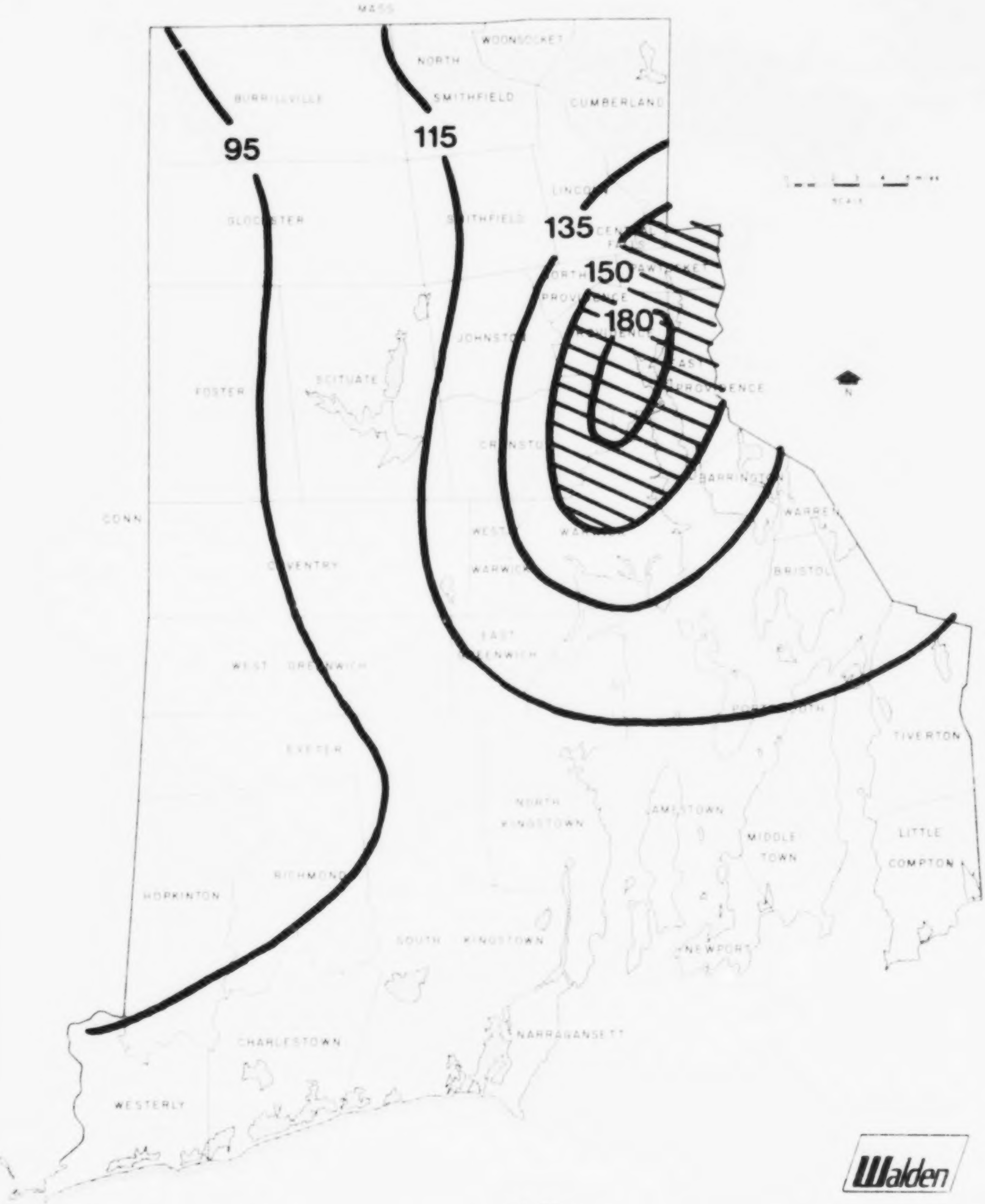
Figure 4-12. Predicted Base Case 1985 Second-Highest 24-Hour TSP Concentrations in Rhode Island ($\mu g/m^3$)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included in the point source inventory, including electric generating power plants.

2. Use of unleaded gasoline by all 1975 and newer light-duty motor vehicles included in the area source inventory.
3. Conversion of all facilities using residual oil in both the point and area source inventories to 2.2 percent sulfur oil.
4. Non-implementation of the State Land Use Plan, thereby allowing a continuation of historical patterns of growth in land use.

These strategies were evaluated individually, i.e., not in various combinations.

The first two strategies were chosen to affect, respectively, reductions in future point and area source particulate emissions. The third strategy was evaluated to assess the effects of relaxing the current Rhode Island sulfur content of fuels regulation that prohibits the sale and use of high-sulfur (i.e., above 1 percent sulfur content) residual oil in the State. This strategy assumed the use of 2.2 percent sulfur residual oil in Rhode Island and the area of southeastern Massachusetts adjacent to the Metropolitan Providence AQMA by all sources that are projected to use residual oil in the future. One such source is unit 4 of NEPCO's Brayton Point power plant (see Section III. B.1). Units 1, 2, and 3 of Brayton Point, however, are assumed to use coal in the future. The last strategy was evaluated to assess the effects of using a different base for the future base case air quality projections. The first three strategies were entered into future CDM air quality predictions through adjustments to the projected point and area source emission inventories. The last strategy was evaluated qualitatively, based on information provided by the Rhode Island Statewide Planning Program.

A recent study [25] conducted by Walden Research to evaluate control strategies for stationary fuel burning sources in Boston concluded that, in general, a reduction of 37 percent in particulate emission rates from large boiler sources can be accomplished through an annual inspection and periodic maintenance program of combustion equipment. To test the first strategy in the current study, all combustion boiler particulate emissions in the future point source inventories were reduced 37 percent. Future TSP predictions for 1978, 1980, and 1985 utilizing these modified inventories were then obtained. Modeling results show that the projected effects of the boiler inspection/maintenance strategy on ambient TSP levels are minimal. Predicted annual average TSP concentrations in future years are reduced, at most, 1 $\mu g/m^3$ from the corresponding predicted base case levels shown in Figures 4-9 and 4-10. The maximum predicted base case concentration of 61.4 μg/m^3 in Providence is reduced only to 60.7 μg/m^3. Thus, implementation of this strategy will not prevent the annual secondary TSP standard from being exceeded slightly in 1985. These results are consistent with the projected small point source contributions to future annual TSP concentrations discussed in Section IV.E. It is expected, however, that this strategy would more significantly reduce maximum daily TSP levels in the AQMA, since point source contributions to ambient levels are usually larger for shorter time periods. Since predicted TSP concentrations are practically identical to those for the base case, isopleth maps were not prepared.

There are two principal sources of particulate emissions from motor vehicles: exhaust gases and tire wear. Recent air pollutant emission factors published by the EPA [26] indicate that exclusive use of unleaded gasoline will reduced the total particulate emission rates of light-duty motor vehicles by 44 percent. Currently, some, but not all, 1975 motor vehicles are required to use unleaded gasoline because of catalytic mufflers. The recent suspension of the 1977 federal motor vehicle emission standards by the EPA Administrator was necessitated by the discovery that catalytic mufflers equipped with air pumps to meet the 1977 standards might emit sulfuric acid mist at hazardous levels. Since it is uncertain whether catalytic mufflers will be a standard item of emissions control equipment on future model year cars, it was assumed for the future base case that catalytic mufflers, and hence unleaded gasoline, will not be used. To test the second strategy, particulate emissions from all 1975 and newer light-duty motor vehicles in the future area source inventories were reduced by 44 percent to reflect the use of unleaded gasoline. Note that emissions from all motor vehicles in the inventories were not reduced by this amount for two reasons. First, about 5 percent of the motor vehicles in the inventories are heavy-duty diesel vehicles and so are not affected. Second, the inventories contain many pre-1975 vehicles which are also not affected by this strategy. However, the progressive shifting of the motor vehicle population with time toward newer models brings an increasing percentage of the vehicle population under the effects of the strategy in future years. The expected reductions in total emissions of particulates by all sources due to this strategy are shown in Table 4-3.

The results in Table 4-3 show that with the unleaded gas strategy in effect, area source particulate emissions will decline from 1978 to 1985, whereas without

TABLE 4-3

COMPARISON OF FUTURE ANNUAL PARTICULATE EMISSION RATES IN RHODE ISLAND AND THE ADJOINING PORTION OF SOUTHEASTERN MASSACHUSETTS FOR THE BASE CASE AND THE UNLEADED GAS STRATEGY CASE

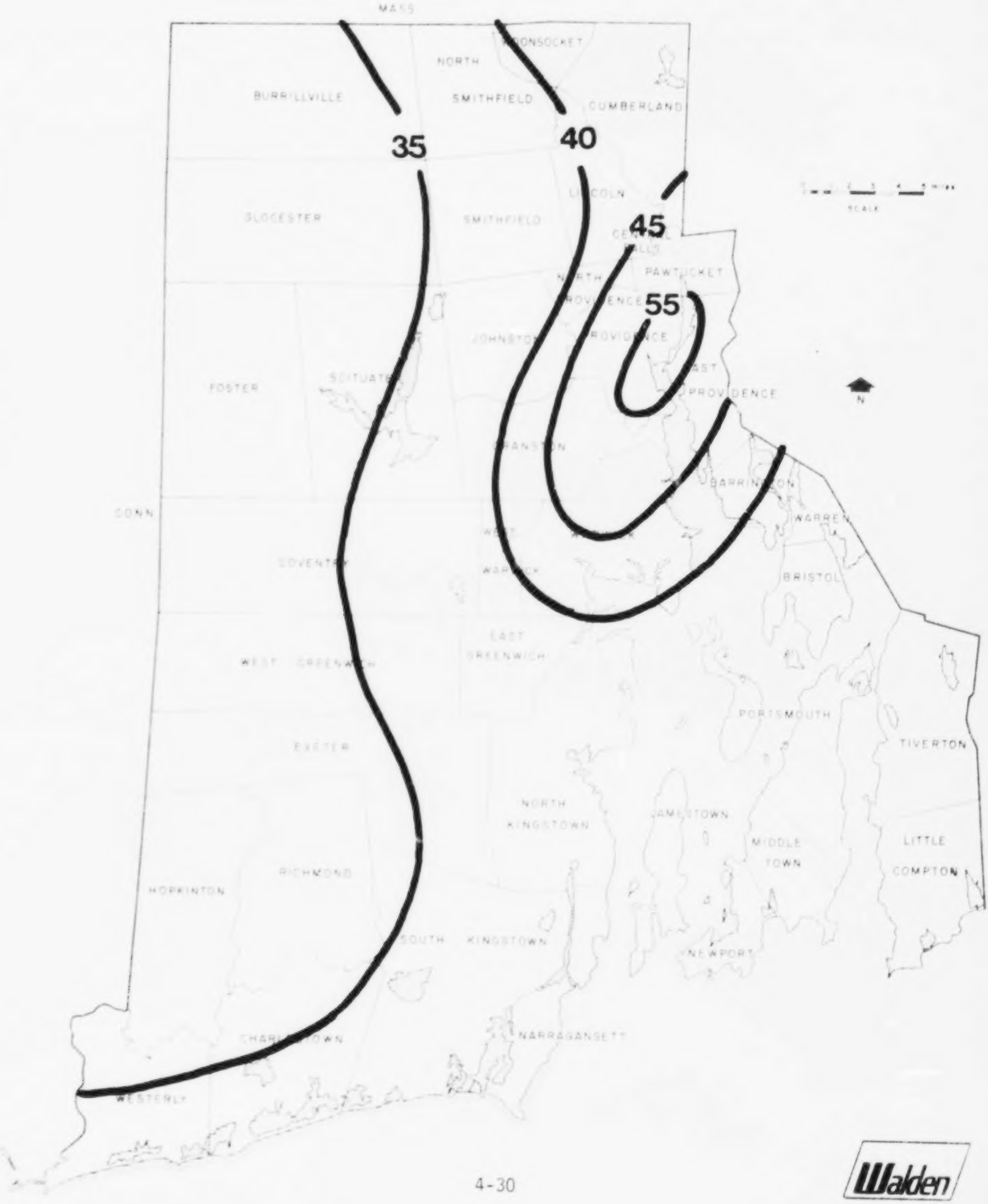
Year	Particulate Emission Rates				Percent Reduction
	Base Case		Unleaded Gas Strategy		
	10^3 metric tons	(10^3 tons)	10^3 metric tons	(10^3 tons)	
Area Sources					
1978	28.5	(31.4)	25.8	(28.4)	10%
1980	28.9	(31.8)	25.1	(27.6)	13%
1985	30.6	(33.7)	25.0	(27.5)	18%
Point Sources					
1978	8.6	(9.5)	8.6	(9.5)	0%
1980	7.6	(8.4)	7.6	(8.4)	0%
1985	5.1	(5.6)	5.1	(5.6)	0%
Total					
1978	37.1	(40.9)	34.4	(37.9)	7%
1980	36.5	(40.2)	32.7	(36.0)	11%
1985	35.7	(39.3)	30.0	(33.1)	16%

the strategy, they will rise during the same time period. Implementation of the strategy will significantly reduce total particulate emissions in future years. Future TSP predictions for 1978, 1980, and 1985 utilizing the modified inventories show that the unleaded gas strategy will maintain ambient annual average TSP concentrations in the Metropolitan Providence AQMA below the secondary standard of 60 $\mu g/m^3$ through 1985. Predicted concentration isopleths for this strategy are shown in Figures 4-13 and 4-14, respectively, for 1978 and 1985. The maximum predicted concentrations were 58 $\mu g/m^3$ in 1978 and 57 $\mu g/m^3$ in 1980 and 55 $\mu g/m^3$ in 1985, occurring in the City of Providence.

To evaluate the third strategy, SO_2 emissions in the future projected point and area source inventories were increased wherever applicable to reflect the use of 2.2 percent sulfur residual oil. Future SO_2 concentrations for 1978, 1980, and 1985 utilizing these modified inventories show that the use of 2.2 percent residual oil will cause the annual primary standard of 80 $\mu g/m^3$ to be exceeded in all three future years. Predicted concentration isopleths for this strategy are shown in Figures 4-15 and 4-16, respectively, for 1978 and 1985. The maximum predicted SO_2 concentrations were 88 $\mu g/m^3$ in 1978, 89 $\mu g/m^3$ in 1980, and 90 $\mu g/m^3$ in 1985, occurring in the City of Providence.

Non-implementation of the State Land Use Plan, the last strategy evaluated, will have two principal effects on future ambient air quality in the AQMA. First, land use, population, and employment projections on the city and town level for a continuation of historical patterns of growth differ from those associated with the Land Use Plan only in industrial acreage projections. Since industrial acreage was used in projecting future industrial area source fuel use (see Section III.B.2.a.(3)), this strategy will affect future industrial area source emissions. An analysis of the data indicates that non-implementation of the Land Use Plan will increase base case 1985 projected industrial area source emissions of SO_2 and TSP in the AQMA from 4 to 6 percent in the municipalities of Providence, Pawtucket, Woonsocket, Central Falls, and North Smithfield and 20 percent in the City of Newport. The results, shown in Table 4-4, indicate that the large percentage increase for Newport is due principally to the fact that projected 1985 base case industrial area source emissions for this city are very low. All of these increases, however, are less

Figure 4-13. Predicted 1978 Annual Average TSP Concentrations in Rhode Island for the Unleaded Gas Strategy ($\mu g/m^3$)


MASS
WOONSOCKET
NORTH SMITHFIELD
BURRILLVILLE
CUMBERLAND
35
40
45
55
LINCOLN
GLOCESTER
SMITHFIELD
CENTRAL FALLS
PAWTUCKET
NORTH PROVIDENCE
PROVIDENCE
JOHNSTON
EAST PROVIDENCE
FOSTER
SCITUATE
CRANSTON
BARRINGTON
WARREN
CONN
WEST WARWICK
WARWICK
COVENTRY
BRISTOL
EAST GREENWICH
WEST GREENWICH
PORTSMOUTH
EXETER
TIVERTON
NORTH KINGSTOWN
JAMESTOWN
MIDDLE TOWN
LITTLE COMPTON
RICHMOND
HOPKINTON
SOUTH KINGSTOWN
NEWPORT
NARRAGANSETT
CHARLESTOWN
WESTERLY
SCALE
N

Walden

Figure 4-14. Predicted 1985 Annual Average TSP Concentrations in Rhode Island for the Unleaded Gas Strategy ($\mu g/m^3$)

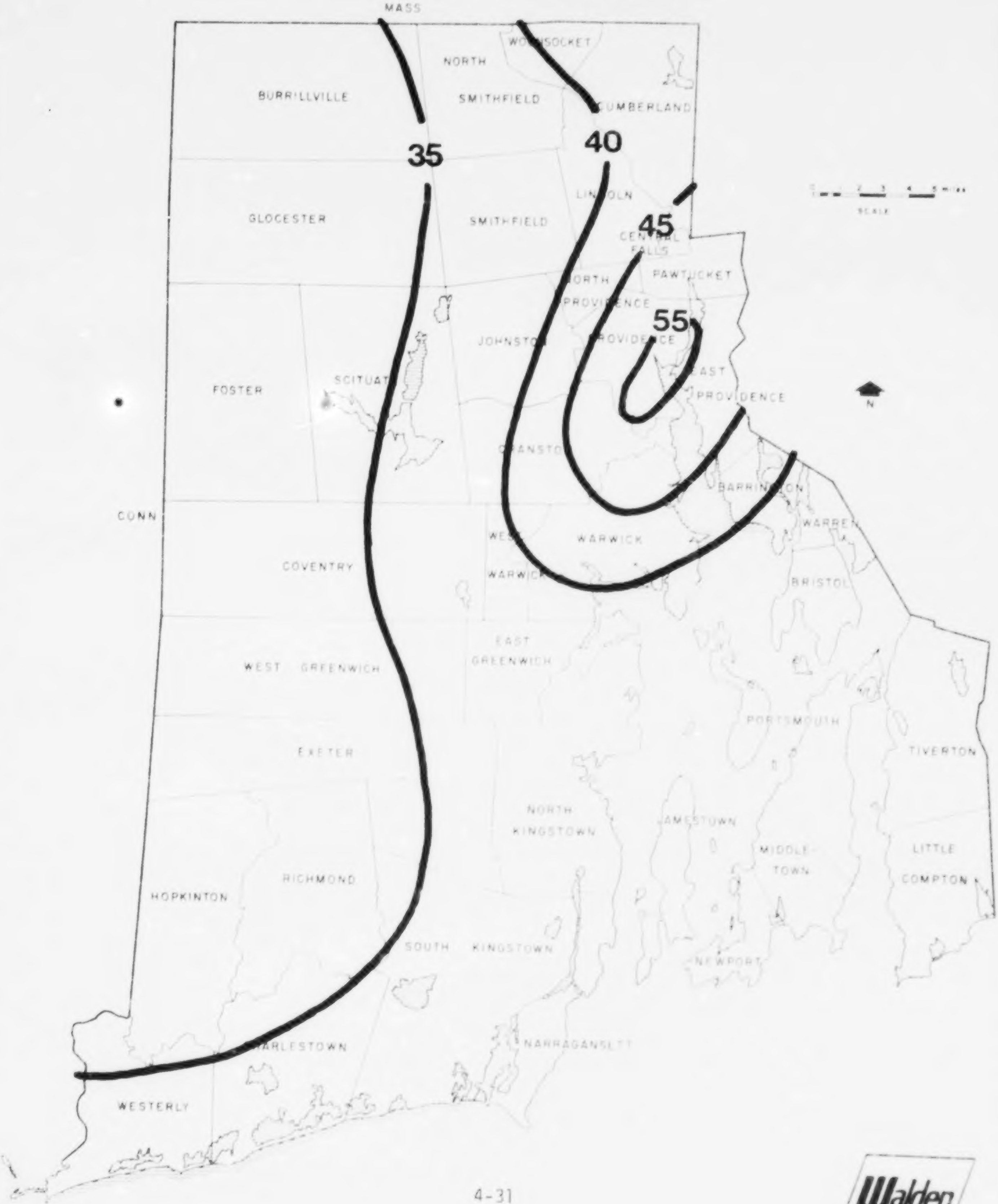

MASS
WOONSOCKET
NORTH
SMITHFIELD
BURRILLVILLE
CUMBERLAND
35
40
LINCOLN
GLOCESTER
SMITHFIELD
45
CENTRAL FALLS
PAWTUCKET
NORTH PROVIDENCE
55
JOHNSTON
PROVIDENCE
EAST PROVIDENCE
FOSTER
SCITUATE
CRANSTON
N
SCALE
BARRINGTON
CONN
WEST WARWICK
WARWICK
WARREN
COVENTRY
BRISTOL
EAST GREENWICH
WEST GREENWICH
PORTSMOUTH
EXETER
TIVERTON
NORTH KINGSTOWN
JAMESTOWN
MIDDLETOWN
LITTLE COMPTON
HOPKINTON
RICHMOND
SOUTH KINGSTOWN
NEWPORT
CHARLESTOWN
NARRAGANSETT
WESTERLY

Figure 4-15. Predicted 1978 Annual Average SO_2 Concentrations in Rhode Island for the 2.2 Percent Sulfur Strategy Case ($\mu g/m^3$)

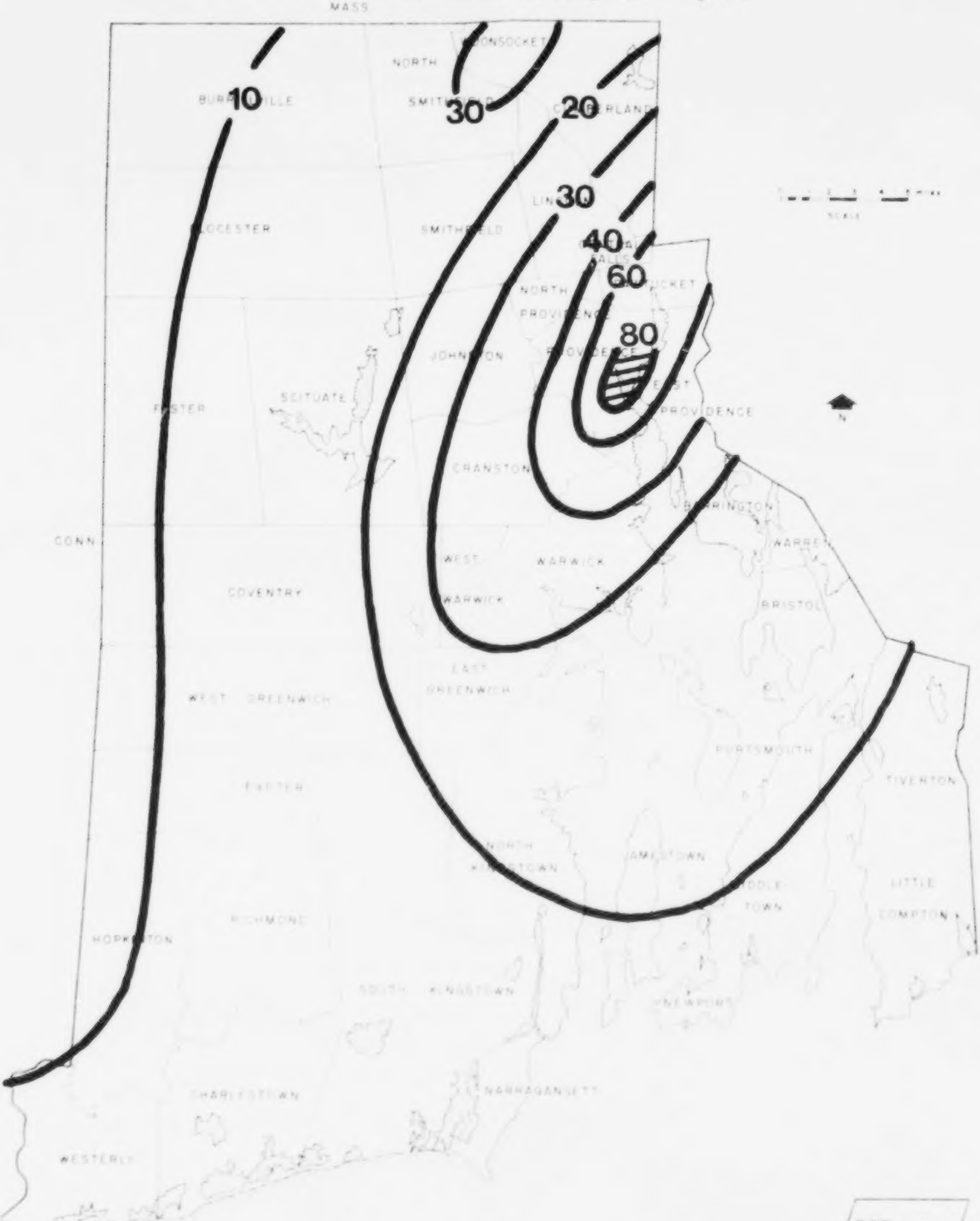

MASS
10
30
20
30
40
60
80
WOONSOCKET
NORTH SMITHFIELD
BURRILLVILLE
CUMBERLAND
LINCOLN
GLOCESTER
SMITHFIELD
CENTRAL FALLS
PAWTUCKET
NORTH PROVIDENCE
JOHNSTON
PROVIDENCE
EAST PROVIDENCE
FOSTER
SCITUATE
CRANSTON
BARRINGTON
CONN
WARREN
WEST WARWICK
WARWICK
COVENTRY
BRISTOL
EAST GREENWICH
WEST GREENWICH
PORTSMOUTH
EXETER
TIVERTON
NORTH KINGSTOWN
JAMESTOWN
MIDDLETOWN
LITTLE COMPTON
RICHMOND
HOPKINTON
SOUTH KINGSTOWN
NEWPORT
NARRAGANSETT
CHARLESTOWN
WESTERLY
SCALE
N

Figure 4-16. Predicted 1985 Annual Average SO_2 Concentrations in Rhode Island for the 2.2 Percent Sulfur Strategy Case ($\mu g/m^3$)

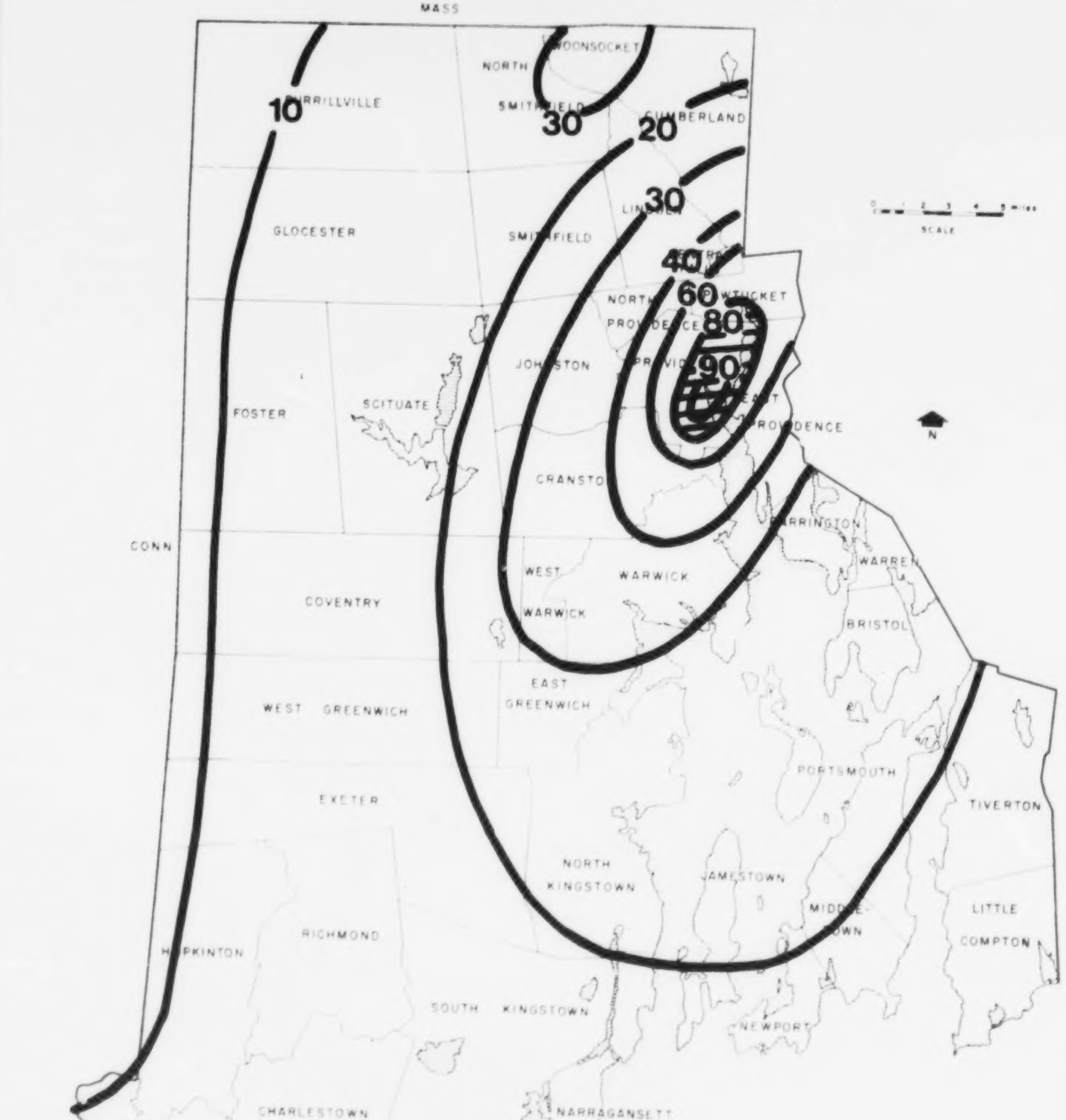

MASS
WOONSOCKET
NORTH SMITHFIELD
BURRILLVILLE
CUMBERLAND
GLOCESTER
SMITHFIELD
LINCOLN
NORTH PROVIDENCE
PAWTUCKET
JOHNSTON
PROVIDENCE
EAST PROVIDENCE
SCITUATE
FOSTER
CRANSTON
BARRINGTON
WARREN
CONN
WEST WARWICK
WARWICK
COVENTRY
BRISTOL
EAST GREENWICH
WEST GREENWICH
PORTSMOUTH
TIVERTON
EXETER
NORTH KINGSTOWN
JAMESTOWN
MIDDLETOWN
LITTLE COMPTON
HOPKINTON
RICHMOND
SOUTH KINGSTOWN
NEWPORT
CHARLESTOWN
NARRAGANSETT
WESTERLY
10
30
20
30
40
60
80
90
0 1 2 3 4 5 miles
SCALE
N

TABLE 4-4

CITIES AND TOWNS IN THE METROPOLITAN PROVIDENCE AREA IN WHICH NON-IMPLEMENTATION OF THE STATE LAND USE PLAN WILL CAUSE AN INCREASE IN 1985 BASE CASE INDUSTRIAL AREA SOURCE EMISSIONS

Municipality	1985 Annual SO_2 Emissions				1985 Annual TSP Emissions				Percentage Increase
	Plan		No Plan		Plan		No Plan		
	10^3 metric tons	(10^3 tons)	10^3 metric tons	(10^3 tons)	10^3 metric tons	(10^3 tons)	10^3 metric tons	(10^3 tons)	
Providence	1,502	(1,655)	1,568	(1,727)	212	(233)	221	(243)	4%
Pawtucket	959	(1,056)	999	(1,100)	135	(149)	141	(155)	4%
Central Falls	148	(163)	157	(173)	21	(23)	22	(24)	6%
Woonsocket	250	(275)	262	(289)	35	(37)	37	(41)	5%
Newport	8	(9)	10	(11)	1.1	(1.2)	1.3	(1.4)	20%
North Smithfield	123	(136)	132	(145)	17	(19)	18	(20)	6%

than 1 percent when expressed in relation to the total emissions from each municipality.

The second effect this strategy will have on future air quality will be through land use density. One of the principal goals of the Land Use Plan is to control urban sprawl and dispersion within each municipality and to foster more compact urban growth. This process will make significantly more efficient use of available land. "Sprawl" is the type of land development in which numerous small areas of urban development appear at random throughout a basically rural region. Two examples are strip-highway commercial and medium-density residential developments. The continuation of urban sprawl will make inefficient use of available land in future residential, commercial, and industrial developments in the AQMA [33]. This inefficiency will, in turn, cause an increase in future projected fuel use for transportation and space heating sources. Consequently, future projected SO_2 and TSP emissions from these sources will increase.

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VI. APPENDICES

A. SOURCES AND EFFECTS OF SET I POLLUTANTS

A brief review of the known effects of Set I pollutants, sulfur dioxide (SO_2) and total suspended particulates (TSP), on health, materials, and other receptors is presented in the following sections. These are the two pollutants whose future projected levels were analyzed in the current air quality maintenance study. Although scientific evidence is far from complete, extensive experimental and epidemiological studies [27, 28, 29] have verified that air pollution adversely affects health, the environment, and the economy, with the extent of such effects dependent on concentration levels and exposure time.

1. Oxides of Sulfur

Sulfur oxide emissions arise principally from the combustion of carbonaceous fuels containing sulfur compounds, most notably coal and petroleum. The predominant form is sulfur dioxide (SO_2), a colorless gas with a vile, pungent odor. In ambient air, it oxidizes and hydrolyzes to form acid sulfates and sulfuric acid by a number of different atmospheric reaction processes. Precipitation scavenging of sulfates and sulfur oxides, the principal mechanism for removal of these compounds from the atmosphere, causes increased acidity in the associated rainfall.

SO_2 is normally a mild irritant of the upper respiratory tract. However, when aerosols are present, SO_2 can be adsorbed (coated) onto the particulate surfaces, oxidized into one of the acid sulfates, and carried deep into the lung. There, in the presence of moisture, it can hydrolyze to sulfuric acid on the pulmonary membrane. Correlation studies have linked SO_2 and sulfates with the incidence of acute respiratory diseases and their associated mortality rates. Current controversy over catalytic mufflers' being installed on many new model cars concerns the possibility that they may cause formation of sulfuric acid mist from the small amounts of sulfur present in gasoline. In addition, laboratory experiments have found sulfur oxides to be damaging to animals, plants, building materials, art works, textiles, and paints.

2. Particulates

On a global basis, the bulk of particulate matter in the air is of natural origins. However, in urban areas, the proportion due to industrial processes, fuel burning, and road dust predominates. Particulates play an important role in air pollution for several reasons. For example, chronic exposure to high concentrations of particulate matter may be injurious to the lungs. This pollutant can also act in a synergistic role in potentiating the toxic effects of certain other pollutants, such as SO_2. Some metallic ashes catalyze the oxidation of SO_2 into acid sulfates. Particulate matter is responsible for atmospheric turbidity and reduced visibility; it is also thought to affect the earth's energy balance through changes in the earth's albedo and absorption of radiation.

It is now generally agreed that particle size is a major factor in determining the toxic effects of airborne particulate matter [30]. In general, pulmonary deposition increases as particle diameters decrease, with particulate matter less than 1 μm in diameter of primary importance. Recent studies have shown a number of potentially toxic trace species, including lead, predominate in small, lung-depositing particles in most urban aerosols.

There is much concern over ambient concentrations of lead particulates in urban environments; the major source of such airborne lead (98%) is the burning of gasoline containing tetraethyl lead additives [31]. The health effects of airborne lead are somewhat controversial. Lead is known to be a poison, and it is cumulative in the body. Lead poisoning can give rise to several acute and chronic diseases. It has been reported that lead in the bloodstream may interfere with maturation and development of red blood cells, cause disturbance of enzyme activity, and interfere with liver and kidney functions. However, studies [32] have shown no cases of illness or death to animals or people traceable to lead particulates from motor vehicle exhausts.

Of all lead normally taken into the body of the typical urban adult, only 25-30% comes from inhaled air [30]. With the development and increasing use of unleaded fuels, this contribution should decrease with time. There are current no Federal or Rhode Island Ambient Air Quality Standards for lead particulates.

B. AREA SOURCE EMISSIONS

All area source emissions inventories developed and used in the current program are summarized in this section. These data represent current and projected SO_2 and TSP area source emissions for Rhode Island and southeastern Massachusetts, as discussed in Section III.

The data columns give, respectively, for each area source grid square, the following:

- East-West and North-South Universal Transverse Mercator (UTM) coordinates of the southwest corner of the grid square
- Length of the sides of the grid square (m)
- TSP and SO_2 emission rates (g/s)
- Source release height (m)

1. Updated 1974 Inventory

262.0	4576.0	3000.0	1.27	0.50	15
262.0	4579.0	3000.0	4.85	1.36	15
262.0	4582.0	3000.0	16.98	5.00	15
262.0	4585.0	3000.0	4.18	1.66	15
262.0	4588.0	3000.0	0.24	0.67	15
262.0	4591.0	3000.0	0.80	1.15	15
262.0	4594.0	3000.0	0.28	0.77	15
262.0	4597.0	3000.0	0.10	0.11	15
262.0	4600.0	3000.0	0.08	0.10	15
262.0	4603.0	3000.0	0.02	0.06	15
262.0	4606.0	3000.0	0.02	0.06	15
262.0	4609.0	3000.0	0.03	0.09	15
262.0	4612.0	3000.0	0.07	0.10	15
262.0	4615.0	3000.0	0.08	0.11	15
262.0	4618.0	3000.0	0.15	0.13	15
262.0	4621.0	3000.0	0.14	0.10	15
262.0	4624.0	3000.0	0.16	0.08	15
262.0	4627.0	3000.0	0.15	0.08	15
262.0	4630.0	3000.0	1.77	0.70	15
262.0	4633.0	3000.0	0.17	0.09	15
262.0	4636.0	3000.0	0.22	0.37	15
262.0	4639.0	3000.0	3.55	0.67	15
262.0	4642.0	3000.0	2.12	0.74	15
262.0	4645.0	3000.0	0.09	0.07	15
262.0	4648.0	3000.0	0.18	0.09	15
262.0	4651.0	3000.0	0.02	0.05	15
262.0	4654.0	3000.0	0.16	0.09	15
265.0	4576.0	3000.0	0.33	0.16	15
265.0	4579.0	3000.0	2.48	1.77	15
265.0	4582.0	3000.0	1.48	0.62	15
265.0	4585.0	3000.0	3.53	1.61	15
265.0	4588.0	3000.0	2.65	1.19	15
265.0	4591.0	3000.0	0.80	1.15	15
265.0	4594.0	3000.0	0.35	0.79	15
265.0	4597.0	3000.0	0.10	0.11	15
265.0	4600.0	3000.0	0.08	0.10	15
265.0	4603.0	3000.0	0.02	0.06	15
265.0	4606.0	3000.0	0.02	0.06	15
265.0	4609.0	3000.0	0.03	0.09	15
265.0	4612.0	3000.0	0.07	0.10	15
265.0	4615.0	3000.0	0.08	0.11	15
265.0	4618.0	3000.0	0.15	0.13	15
265.0	4621.0	3000.0	0.14	0.10	15
265.0	4624.0	3000.0	0.16	0.08	15
265.0	4627.0	3000.0	0.15	0.08	15
265.0	4630.0	3000.0	1.77	0.70	15
265.0	4633.0	3000.0	0.17	0.09	15
265.0	4636.0	3000.0	0.22	0.37	15
265.0	4639.0	3000.0	3.55	0.67	15
265.0	4642.0	3000.0	2.12	0.74	15
265.0	4645.0	3000.0	0.09	0.07	15
265.0	4648.0	3000.0	0.18	0.09	15
265.0	4651.0	3000.0	0.02	0.05	15
265.0	4654.0	3000.0	0.16	0.09	15
268.0	4576.0	3000.0	0.49	0.15	15
268.0	4579.0	3000.0	1.65	1.65	15
268.0	4582.0	3000.0	0.32	0.42	15
268.0	4585.0	3000.0	6.75	1.61	15
268.0	4588.0	3000.0	0.30	0.32	15

268.0	4591.0	3000.0	0.67	0.86	15
268.0	4594.0	3000.0	0.50	0.83	15
268.0	4597.0	3000.0	1.09	0.29	15
268.0	4600.0	3000.0	1.07	0.28	15
268.0	4603.0	3000.0	0.02	0.06	15
268.0	4606.0	3000.0	0.04	0.07	15
268.0	4609.0	3000.0	0.04	0.10	15
268.0	4612.0	3000.0	0.07	0.10	15
268.0	4615.0	3000.0	0.08	0.11	15
268.0	4618.0	3000.0	0.15	0.13	15
268.0	4621.0	3000.0	0.14	0.10	15
268.0	4624.0	3000.0	0.16	0.08	15
268.0	4627.0	3000.0	0.15	0.08	15
268.0	4630.0	3000.0	1.77	0.70	15
268.0	4633.0	3000.0	0.17	0.09	15
268.0	4636.0	3000.0	0.22	0.37	15
268.0	4639.0	3000.0	3.55	0.67	15
268.0	4642.0	3000.0	2.12	0.74	15
268.0	4645.0	3000.0	0.09	0.07	15
268.0	4648.0	3000.0	0.18	0.09	15
268.0	4651.0	3000.0	0.02	0.05	15
268.0	4654.0	3000.0	0.16	0.09	15
271.0	4576.0	3000.0	0.02	0.01	15
271.0	4579.0	3000.0	0.56	0.46	15
271.0	4582.0	3000.0	0.14	0.21	15
271.0	4585.0	3000.0	0.12	0.17	15
271.0	4588.0	3000.0	0.30	0.32	15
271.0	4591.0	3000.0	1.31	0.34	15
271.0	4594.0	3000.0	0.57	1.15	15
271.0	4597.0	3000.0	1.98	0.93	15
271.0	4600.0	3000.0	0.30	0.15	15
271.0	4603.0	3000.0	0.10	0.08	15
271.0	4606.0	3000.0	0.07	0.08	15
271.0	4609.0	3000.0	0.04	0.09	15
271.0	4612.0	3000.0	0.04	0.09	15
271.0	4615.0	3000.0	0.08	0.11	15
271.0	4618.0	3000.0	0.18	0.14	15
271.0	4621.0	3000.0	0.14	0.10	15
271.0	4624.0	3000.0	0.05	0.05	15
271.0	4627.0	3000.0	1.89	0.39	15
271.0	4630.0	3000.0	0.30	0.36	15
271.0	4633.0	3000.0	0.27	0.30	15
271.0	4636.0	3000.0	2.09	0.72	15
271.0	4639.0	3000.0	0.09	0.07	15
271.0	4642.0	3000.0	0.37	0.44	15
271.0	4645.0	3000.0	0.06	0.06	15
271.0	4648.0	3000.0	1.28	0.45	15
271.0	4651.0	3000.0	0.38	0.13	15
271.0	4654.0	3000.0	0.30	0.13	15
274.0	4576.0	3000.0	0.00	0.00	15
274.0	4579.0	3000.0	0.08	0.03	15
274.0	4582.0	3000.0	0.87	0.58	15
274.0	4585.0	3000.0	0.03	0.04	15
274.0	4588.0	3000.0	2.67	0.54	15
274.0	4591.0	3000.0	0.37	0.33	15
274.0	4594.0	3000.0	0.06	0.10	15
274.0	4597.0	3000.0	1.18	1.79	15
274.0	4600.0	3000.0	0.61	1.32	15
274.0	4603.0	3000.0	0.23	0.11	15
274.0	4606.0	3000.0	0.06	0.07	15

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274.0 4609.0 3000.0      0.07      0.13      15
274.0 4612.0 3000.0      0.21      0.24      15
274.0 4615.0 3000.0      0.20      0.14      15
274.0 4618.0 3000.0      0.50      0.29      15
274.0 4621.0 3000.0      0.08      0.17      15
274.0 4624.0 3000.0      0.08      0.19      15
274.0 4627.0 3000.0      0.15      0.23      15
274.0 4630.0 3000.0      0.09      0.07      15
274.0 4633.0 3000.0      0.53      0.56      15
274.0 4636.0 3000.0      0.26      0.28      15
274.0 4639.0 3000.0      0.13      0.08      15
274.0 4642.0 3000.0      0.69      0.55      15
274.0 4645.0 3000.0      1.57      0.47      15
274.0 4648.0 3000.0      5.59      1.43      15
274.0 4651.0 3000.0      0.15      0.09      15
274.0 4654.0 3000.0      0.58      0.21      15
277.0 4576.0 3000.0      0.00      0.00      15
277.0 4579.0 3000.0      0.02      0.01      15
277.0 4582.0 3000.0      0.71      0.29      15
277.0 4585.0 3000.0      0.33      0.62      15
277.0 4588.0 3000.0      0.38      0.38      15
277.0 4591.0 3000.0      1.44      0.80      15
277.0 4594.0 3000.0      0.14      0.22      15
277.0 4597.0 3000.0      0.45      0.43      15
277.0 4600.0 3000.0      0.08      0.11      15
277.0 4603.0 3000.0      0.83      2.02      15
277.0 4606.0 3000.0      0.99      1.72      15
277.0 4609.0 3000.0      0.70      0.99      15
277.0 4612.0 3000.0      0.05      0.10      15
277.0 4615.0 3000.0      0.34      0.17      15
277.0 4618.0 3000.0      0.32      0.40      15
277.0 4621.0 3000.0      0.42      0.18      15
277.0 4624.0 3000.0      0.10      0.08      15
277.0 4627.0 3000.0      0.92      0.35      15
277.0 4630.0 3000.0      0.19      0.11      15
277.0 4633.0 3000.0      0.86      1.21      15
277.0 4636.0 3000.0      0.18      0.16      15
277.0 4639.0 3000.0      0.62      0.31      15
277.0 4642.0 3000.0      1.19      1.19      15
277.0 4645.0 3000.0      0.68      0.79      15
277.0 4648.0 3000.0      4.10      1.21      15
277.0 4651.0 3000.0      0.29      0.13      15
277.0 4654.0 3000.0      0.02      0.05      15
280.0 4576.0 3000.0      0.00      0.00      15
280.0 4579.0 3000.0      0.01      0.00      15
280.0 4582.0 3000.0      0.57      0.27      15
280.0 4585.0 3000.0      0.45      0.62      15
280.0 4588.0 3000.0      0.10      0.08      15
280.0 4591.0 3000.0      1.86      0.50      15
280.0 4594.0 3000.0      0.26      0.46      15
280.0 4597.0 3000.0      0.18      0.27      15
280.0 4600.0 3000.0      0.10      0.10      15
280.0 4603.0 3000.0      0.10      0.09      15
280.0 4606.0 3000.0      0.12      0.20      15
280.0 4609.0 3000.0      0.57      1.19      15
280.0 4 12.0 3000.0      0.72      1.49      15
280.0 4615.0 3000.0      0.93      0.35      15
280.0 4618.0 3000.0      2.35      0.96      15
280.0 4621.0 3000.0      0.28      0.15      15
280.0 4624.0 3000.0      0.18      0.11      15
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280.0 4627.0 3000.0    1.05    0.23    15
280.0 4630.0 3000.0    0.60    0.23    15
280.0 4633.0 3000.0    1.98    1.43    15
280.0 4636.0 3000.0    1.04    0.25    15
280.0 4639.0 3000.0    1.20    0.48    15
280.0 4642.0 3000.0    0.45    0.37    15
280.0 4645.0 3000.0    3.45    1.01    15
280.0 4648.0 3000.0    1.84    1.18    15
280.0 4651.0 3000.0    1.27    0.31    15
280.0 4654.0 3000.0    0.02    0.05    15
283.0 4576.0 3000.0    0.00    0.00    15
283.0 4579.0 3000.0    0.00    0.00    15
283.0 4582.0 3000.0    0.14    0.11    15
283.0 4585.0 3000.0    0.45    0.76    15
283.0 4588.0 3000.0    0.14    0.16    15
283.0 4591.0 3000.0    0.05    0.14    15
283.0 4594.0 3000.0    0.33    0.44    15
283.0 4597.0 3000.0    0.19    0.27    15
283.0 4600.0 3000.0    0.07    0.07    15
283.0 4603.0 3000.0    0.06    0.07    15
283.0 4606.0 3000.0    0.11    0.17    15
283.0 4609.0 3000.0    0.04    0.10    15
283.0 4612.0 3000.0    1.21    1.63    15
283.0 4615.0 3000.0    3.15    1.85    15
283.0 4618.0 3000.0    8.97    2.08    15
283.0 4621.0 3000.0    0.58    0.22    15
283.0 4624.0 3000.0    0.44    0.14    15
283.0 4627.0 3000.0    0.25    0.14    15
283.0 4630.0 3000.0    0.13    0.20    15
283.0 4633.0 3000.0    2.80    1.67    15
283.0 4636.0 3000.0    1.54    0.43    15
283.0 4639.0 3000.0    0.58    0.51    15
283.0 4642.0 3000.0    0.07    0.08    15
283.0 4645.0 3000.0    0.11    0.09    15
283.0 4648.0 3000.0    0.69    0.73    15
283.0 4651.0 3000.0    0.77    0.62    15
283.0 4654.0 3000.0    0.86    0.66    15
286.0 4576.0 3000.0    0.00    0.00    15
286.0 4579.0 3000.0    0.00    0.00    15
286.0 4582.0 3000.0    0.70    0.27    15
286.0 4585.0 3000.0    0.78    0.86    15
286.0 4588.0 3000.0    1.22    0.53    15
286.0 4591.0 3000.0    0.19    0.18    15
286.0 4594.0 3000.0    2.38    0.98    15
286.0 4597.0 3000.0    0.46    0.24    15
286.0 4600.0 3000.0    0.68    0.28    15
286.0 4603.0 3000.0    0.57    0.26    15
286.0 4606.0 3000.0    0.13    0.12    15
286.0 4609.0 3000.0    0.15    0.23    15
286.0 4612.0 3000.0    0.98    1.87    15
286.0 4615.0 3000.0    8.65    4.04    15
286.0 4618.0 3000.0   16.68    5.43    15
286.0 4621.0 3000.0    9.00    2.16    15
286.0 4624.0 3000.0    0.81    0.65    15
286.0 4627.0 3000.0    2.39    1.01    15
286.0 4630.0 3000.0    3.77    0.87    15
286.0 4633.0 3000.0    1.41    1.22    15
286.0 4636.0 3000.0    3.90    1.81    15
286.0 4639.0 3000.0    2.06    1.12    15
286.0 4642.0 3000.0    0.54    0.49    15
```

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286.0 4645.0 3000.0     0.64     0.89     15
286.0 4648.0 3000.0     3.35     1.21     15
286.0 4651.0 3000.0    15.03     4.27     15
286.0 4654.0 3000.0     9.58     3.19     15
289.0 4576.0 3000.0     0.00     0.00     15
289.0 4579.0 3000.0     0.00     0.00     15
289.0 4582.0 3000.0     1.38     1.04     15
289.0 4585.0 3000.0     0.80     0.35     15
289.0 4588.0 3000.0     3.99     1.93     15
289.0 4591.0 3000.0     6.60     2.08     15
289.0 4594.0 3000.0     2.61     1.12     15
289.0 4597.0 3000.0     0.13     0.17     15
289.0 4600.0 3000.0     0.21     0.25     15
289.0 4603.0 3000.0     0.40     0.42     15
289.0 4606.0 3000.0     0.75     1.15     15
289.0 4609.0 3000.0     3.39     0.97     15
289.0 4612.0 3000.0     2.65     0.88     15
289.0 4615.0 3000.0    13.41     5.47     15
289.0 4618.0 3000.0    25.03     8.60     15
289.0 4621.0 3000.0     9.65     3.58     15
289.0 4624.0 3000.0     0.81     0.85     15
289.0 4627.0 3000.0     1.07     1.30     15
289.0 4630.0 3000.0     2.34     1.49     15
289.0 4633.0 3000.0     5.11     1.96     15
289.0 4636.0 3000.0     3.64     2.35     15
289.0 4639.0 3000.0     2.38     1.41     15
289.0 4642.0 3000.0     5.89     2.01     15
289.0 4645.0 3000.0     0.42     0.57     15
289.0 4648.0 3000.0     1.80     1.81     15
289.0 4651.0 3000.0    25.83     7.87     15
289.0 4654.0 3000.0     1.99     2.53     15
292.0 4576.0 3000.0     0.00     0.00     15
292.0 4579.0 3000.0     0.07     0.02     15
292.0 4582.0 3000.0     0.75     0.81     15
292.0 4585.0 3000.0     1.30     1.68     15
292.0 4588.0 3000.0     3.47     3.38     15
292.0 4591.0 3000.0     1.46     2.34     15
292.0 4594.0 3000.0     2.13     2.68     15
292.0 4597.0 3000.0     0.57     1.47     15
292.0 4600.0 3000.0     2.98     2.60     15
292.0 4603.0 3000.0     6.28     3.89     15
292.0 4606.0 3000.0     1.77     1.52     15
292.0 4609.0 3000.0    18.41     6.72     15
292.0 4612.0 3000.0     5.82     4.33     15
292.0 4615.0 3000.0     3.04     5.32     15
292.0 4618.0 3000.0     6.52     5.78     15
292.0 4621.0 3000.0    15.06     7.42     15
292.0 4624.0 3000.0     6.13     4.36     15
292.0 4627.0 3000.0    13.32     5.17     15
292.0 4630.0 3000.0     6.53     3.79     15
292.0 4633.0 3000.0    13.75     5.40     15
292.0 4636.0 3000.0    19.79     6.12     15
292.0 4639.0 3000.0     2.78     1.44     15
292.0 4642.0 3000.0    14.82     3.51     15
292.0 4645.0 3000.0     3.54     1.79     15
292.0 4648.0 3000.0     3.04     2.56     15
292.0 4651.0 3000.0    28.86     9.32     15
292.0 4654.0 3000.0    18.97     7.18     15
295.0 4576.0 3000.0     0.00     0.00     15
295.0 4579.0 3000.0     0.00     0.00     15
```

```
295.0 4582.0 3000.0    0.00    0.00    15
295.0 4585.0 3000.0    0.00    0.00    15
295.0 4588.0 3000.0    0.04    0.01    15
295.0 4591.0 3000.0    0.76    0.55    15
295.0 4594.0 3000.0    2.06    0.95    15
295.0 4597.0 3000.0    4.46    1.52    15
295.0 4600.0 3000.0    2.72    1.76    15
295.0 4603.0 3000.0    2.08    1.07    15
295.0 4606.0 3000.0    5.50    2.21    15
295.0 4609.0 3000.0    3.16    1.73    15
295.0 4612.0 3000.0    4.29    1.80    15
295.0 4615.0 3000.0    5.48    3.85    15
295.0 4618.0 3000.0   15.69    8.33    15
295.0 4621.0 3000.0   30.86   10.40    15
295.0 4624.0 3000.0   22.74   10.36    15
295.0 4627.0 3000.0   44.88   17.24    15
295.0 4630.0 3000.0   53.96   19.70    15
295.0 4633.0 3000.0   38.63   18.86    15
295.0 4636.0 3000.0   15.16    7.69    15
295.0 4639.0 3000.0    1.05    1.47    15
295.0 4642.0 3000.0    2.06    1.88    15
295.0 4645.0 3000.0    7.94    3.82    15
295.0 4648.0 3000.0    6.22    3.23    15
295.0 4651.0 3000.0    1.44    1.71    15
295.0 4654.0 3000.0    3.96    2.30    15
298.0 4576.0 3000.0    0.00    0.00    15
298.0 4579.0 3000.0    0.00    0.00    15
298.0 4582.0 3000.0    0.00    0.00    15
298.0 4585.0 3000.0    0.00    0.00    15
298.0 4588.0 3000.0    0.00    0.00    15
298.0 4591.0 3000.0    1.01    0.36    15
298.0 4594.0 3000.0    0.51    0.26    15
298.0 4597.0 3000.0    0.80    0.46    15
298.0 4600.0 3000.0    0.19    0.07    15
298.0 4603.0 3000.0    0.00    0.00    15
298.0 4606.0 3000.0    0.98    0.28    15
298.0 4609.0 3000.0    2.43    0.64    15
298.0 4612.0 3000.0    0.25    0.15    15
298.0 4615.0 3000.0    1.93    1.55    15
298.0 4618.0 3000.0   11.28    7.50    15
298.0 4621.0 3000.0   13.96    8.64    15
298.0 4624.0 3000.0   41.95   12.53    15
298.0 4627.0 3000.0   58.40   21.89    15
298.0 4630.0 3000.0   66.04   23.33    15
298.0 4633.0 3000.0   69.38   24.06    15
298.0 4636.0 3000.0   45.92   17.51    15
298.0 4639.0 3000.0   27.83    8.02    15
298.0 4642.0 3000.0   13.00    4.33    15
298.0 4645.0 3000.0    4.56    2.81    15
298.0 4648.0 3000.0    1.24    1.28    15
298.0 4651.0 3000.0    0.83    1.13    15
298.0 4654.0 3000.0    0.85    1.13    15
301.0 4576.0 3000.0    0.00    0.00    15
301.0 4579.0 3000.0    0.00    0.00    15
301.0 4582.0 3000.0    0.00    0.00    15
301.0 4585.0 3000.0    0.00    0.00    15
301.0 4588.0 3000.0    0.00    0.00    15
301.0 4591.0 3000.0    9.28    1.55    15
301.0 4594.0 3000.0    7.71    1.20    15
301.0 4597.0 3000.0    4.47    1.68    15
```

```
301.0 4600.0 3000.0     0.48     0.21     15
301.0 4603.0 3000.0     0.30     0.15     15
301.0 4606.0 3000.0     0.03     0.01     15
301.0 4609.0 3000.0     0.00     0.00     15
301.0 4612.0 3000.0     0.02     0.01     15
301.0 4615.0 3000.0     1.99     2.02     15
301.0 4618.0 3000.0     4.46     4.78     15
301.0 4621.0 3000.0     4.87     2.06     15
301.0 4624.0 3000.0    16.87     4.43     15
301.0 4627.0 3000.0    29.11     6.58     15
301.0 4630.0 3000.0    26.18     9.84     15
301.0 4633.0 3000.0    50.48    17.72     15
301.0 4636.0 3000.0    62.59    19.68     15
301.0 4639.0 3000.0    58.33    16.20     15
301.0 4642.0 3000.0     6.96     2.70     15
301.0 4645.0 3000.0     3.87     1.60     15
301.0 4648.0 3000.0     1.35     1.06     15
301.0 4651.0 3000.0     0.44     0.73     15
301.0 4654.0 3000.0     0.39     0.71     15
304.0 4576.0 3000.0     0.00     0.00     15
304.0 4579.0 3000.0     0.00     0.00     15
304.0 4582.0 3000.0     0.00     0.00     15
304.0 4585.0 3000.0     0.00     0.00     15
304.0 4588.0 3000.0     0.00     0.00     15
304.0 4591.0 3000.0     1.63     1.67     15
304.0 4594.0 3000.0     7.94     2.47     15
304.0 4597.0 3000.0     7.97     1.77     15
304.0 4600.0 3000.0     7.97     0.72     15
304.0 4603.0 3000.0     5.77     0.52     15
304.0 4606.0 3000.0     1.01     0.22     15
304.0 4609.0 3000.0     0.08     0.02     15
304.0 4612.0 3000.0     2.91     0.29     15
304.0 4615.0 3000.0     4.28     0.44     15
304.0 4618.0 3000.0     3.68     0.36     15
304.0 4621.0 3000.0     6.77     1.63     15
304.0 4624.0 3000.0    12.43     6.32     15
304.0 4627.0 3000.0     8.36     5.11     15
304.0 4630.0 3000.0    21.09     6.34     15
304.0 4633.0 3000.0    23.02     7.75     15
304.0 4636.0 3000.0    18.79     8.33     15
304.0 4639.0 3000.0    17.68     6.79     15
304.0 4642.0 3000.0     2.34     1.81     15
304.0 4645.0 3000.0     1.68     1.35     15
304.0 4648.0 3000.0     9.71     3.16     15
304.0 4651.0 3000.0    11.07     3.50     15
304.0 4654.0 3000.0     1.52     1.05     15
307.0 4576.0 3000.0     0.00     0.00     15
307.0 4579.0 3000.0     0.00     0.00     15
307.0 4582.0 3000.0     0.00     0.00     15
307.0 4585.0 3000.0     0.00     0.00     15
307.0 4588.0 3000.0     0.00     0.00     15
307.0 4591.0 3000.0     4.66     1.59     15
307.0 4594.0 3000.0     9.69     3.82     15
307.0 4597.0 3000.0    11.29     5.65     15
307.0 4600.0 3000.0     3.86     2.03     15
307.0 4603.0 3000.0    13.06     2.69     15
307.0 4606.0 3000.0     8.69     0.86     15
307.0 4609.0 3000.0     7.12     0.66     15
307.0 4612.0 3000.0     0.18     0.09     15
307.0 4615.0 3000.0     1.44     0.48     15
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307.0	4618.0	3000.0	1.51	0.58	15
307.0	4621.0	3000.0	8.05	3.43	15
307.0	4624.0	3000.0	2.35	1.16	15
307.0	4627.0	3000.0	3.92	1.74	15
307.0	4630.0	3000.0	0.83	1.22	15
307.0	4633.0	3000.0	1.10	1.19	15
307.0	4636.0	3000.0	0.68	1.00	15
307.0	4639.0	3000.0	2.93	1.78	15
307.0	4642.0	3000.0	5.95	2.54	15
307.0	4645.0	3000.0	12.01	3.39	15
307.0	4648.0	3000.0	9.97	2.94	15
307.0	4651.0	3000.0	10.04	3.00	15
307.0	4654.0	3000.0	1.88	1.58	15
310.0	4576.0	3000.0	0.00	0.00	15
310.0	4579.0	3000.0	0.00	0.00	15
310.0	4582.0	3000.0	0.00	0.00	15
310.0	4585.0	3000.0	0.00	0.00	15
310.0	4588.0	3000.0	0.00	0.00	15
310.0	4591.0	3000.0	0.31	0.06	15
310.0	4594.0	3000.0	1.44	0.57	15
310.0	4597.0	3000.0	1.41	0.66	15
310.0	4600.0	3000.0	0.85	1.14	15
310.0	4603.0	3000.0	3.67	2.06	15
310.0	4606.0	3000.0	3.08	3.05	15
310.0	4609.0	3000.0	19.29	5.97	15
310.0	4612.0	3000.0	3.75	1.86	15
310.0	4615.0	3000.0	21.40	6.26	15
310.0	4618.0	3000.0	7.58	3.96	15
310.0	4621.0	3000.0	13.72	4.53	15
310.0	4624.0	3000.0	2.52	1.26	15
310.0	4627.0	3000.0	0.15	0.41	15
310.0	4630.0	3000.0	0.39	0.42	15
310.0	4633.0	3000.0	0.34	0.41	15
310.0	4636.0	3000.0	0.27	0.39	15
310.0	4639.0	3000.0	0.36	0.42	15
310.0	4642.0	3000.0	5.83	2.44	15
310.0	4645.0	3000.0	24.78	5.88	15
310.0	4648.0	3000.0	1.19	1.32	15
310.0	4651.0	3000.0	1.10	0.69	15
310.0	4654.0	3000.0	0.91	1.73	15
313.0	4576.0	3000.0	0.00	0.00	15
313.0	4579.0	3000.0	0.00	0.00	15
313.0	4582.0	3000.0	0.00	0.00	15
313.0	4585.0	3000.0	0.00	0.00	15
313.0	4588.0	3000.0	0.00	0.00	15
313.0	4591.0	3000.0	0.00	0.00	15
313.0	4594.0	3000.0	-0.01	0.00	15
313.0	4597.0	3000.0	0.28	0.12	15
313.0	4600.0	3000.0	0.41	0.18	15
313.0	4603.0	3000.0	0.38	0.17	15
313.0	4606.0	3000.0	0.44	0.15	15
313.0	4609.0	3000.0	5.31	3.20	15
313.0	4612.0	3000.0	3.37	0.98	15
313.0	4615.0	3000.0	1.86	0.22	15
313.0	4618.0	3000.0	1.13	0.54	15
313.0	4621.0	3000.0	1.48	1.06	15
313.0	4624.0	3000.0	3.21	1.46	15
313.0	4627.0	3000.0	0.55	0.56	15
313.0	4630.0	3000.0	0.72	0.51	15
313.0	4633.0	3000.0	2.38	0.79	15

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313.0 4636.0 3000.0     0.57    0.47     15
313.0 4639.0 3000.0     0.80    0.53     15
313.0 4642.0 3000.0     1.55    1.46     15
313.0 4645.0 3000.0     1.90    1.20     15
313.0 4648.0 3000.0     0.64    0.44     15
313.0 4651.0 3000.0     0.76    0.45     15
313.0 4654.0 3000.0     3.78    1.13     15
316.0 4576.0 3000.0     0.00    0.00     15
316.0 4579.0 3000.0     0.00    0.00     15
316.0 4582.0 3000.0     0.00    0.00     15
316.0 4585.0 3000.0     0.00    0.00     15
316.0 4588.0 3000.0     0.00    0.00     15
316.0 4591.0 3000.0     0.47    0.21     15
316.0 4594.0 3000.0     0.52    0.26     15
316.0 4597.0 3000.0     0.35    0.23     15
316.0 4600.0 3000.0     0.24    0.21     15
316.0 4603.0 3000.0     0.74    0.53     15
316.0 4606.0 3000.0     1.07    0.71     15
316.0 4609.0 3000.0     0.80    0.56     15
316.0 4612.0 3000.0     4.12    4.02     15
316.0 4615.0 3000.0    40.97    7.84     15
316.0 4618.0 3000.0    30.97    5.93     15
316.0 4621.0 3000.0     9.83    3.47     15
316.0 4624.0 3000.0     1.71    1.21     15
316.0 4627.0 3000.0     1.47    0.88     15
316.0 4630.0 3000.0     0.23    0.36     15
316.0 4633.0 3000.0     0.60    0.45     15
316.0 4636.0 3000.0     0.63    0.45     15
316.0 4639.0 3000.0     0.74    0.70     15
316.0 4642.0 3000.0     0.45    0.49     15
316.0 4645.0 3000.0     5.85    1.41     15
316.0 4648.0 3000.0     2.64    0.89     15
316.0 4651.0 3000.0     2.86    0.88     15
316.0 4654.0 3000.0    17.63    3.58     15
319.0 4576.0 3000.0     0.00    0.00     15
319.0 4579.0 3000.0     0.00    0.00     15
319.0 4582.0 3000.0     0.00    0.00     15
319.0 4585.0 3000.0     0.00    0.00     15
319.0 4588.0 3000.0     0.00    0.00     15
319.0 4591.0 3000.0     0.13    0.04     15
319.0 4594.0 3000.0     0.35    0.19     15
319.0 4597.0 3000.0     0.17    0.17     15
319.0 4600.0 3000.0     0.14    0.17     15
319.0 4603.0 3000.0     0.46    0.46     15
319.0 4606.0 3000.0     0.53    0.55     15
319.0 4609.0 3000.0     1.51    0.81     15
319.0 4612.0 3000.0     1.99    1.95     15
319.0 4615.0 3000.0    45.67   12.07     15
319.0 4618.0 3000.0    66.12   13.25     15
319.0 4621.0 3000.0    21.22    6.33     15
319.0 4624.0 3000.0     4.04    2.29     15
319.0 4627.0 3000.0     0.73    1.08     15
319.0 4630.0 3000.0     1.78    0.59     15
319.0 4633.0 3000.0     0.53    0.40     15
319.0 4636.0 3000.0     1.69    0.62     15
319.0 4639.0 3000.0     0.79    0.95     15
319.0 4642.0 3000.0     1.31    0.83     15
319.0 4645.0 3000.0     2.35    0.75     15
319.0 4648.0 3000.0     1.19    0.58     15
319.0 4651.0 3000.0     0.68    0.46     15
319.0 4654.0 3000.0     0.67    0.43     15
```

2. Future Base Case Inventories

a. 1978

262.0	4576.0	3000.0	1.59	0.60	15
262.0	4579.0	3000.0	5.14	1.46	15
262.0	4582.0	3000.0	18.22	5.44	15
262.0	4585.0	3000.0	4.38	1.76	15
262.0	4588.0	3000.0	0.35	0.70	15
262.0	4591.0	3000.0	0.84	1.21	15
262.0	4594.0	3000.0	0.29	0.81	15
262.0	4597.0	3000.0	0.10	0.11	15
262.0	4600.0	3000.0	0.09	0.11	15
262.0	4603.0	3000.0	0.02	0.06	15
262.0	4606.0	3000.0	0.02	0.07	15
262.0	4609.0	3000.0	0.04	0.10	15
262.0	4612.0	3000.0	0.08	0.11	15
262.0	4615.0	3000.0	0.09	0.11	15
262.0	4618.0	3000.0	0.17	0.14	15
262.0	4621.0	3000.0	0.15	0.11	15
262.0	4624.0	3000.0	0.17	0.09	15
262.0	4627.0	3000.0	0.16	0.08	15
262.0	4630.0	3000.0	1.85	0.73	15
262.0	4633.0	3000.0	0.18	0.09	15
262.0	4636.0	3000.0	0.24	0.39	15
262.0	4639.0	3000.0	3.55	0.67	15
262.0	4642.0	3000.0	2.15	0.77	15
262.0	4645.0	3000.0	0.10	0.07	15
262.0	4648.0	3000.0	0.19	0.10	15
262.0	4651.0	3000.0	0.02	0.05	15
262.0	4654.0	3000.0	0.18	0.10	15
265.0	4576.0	3000.0	0.37	0.18	15
265.0	4579.0	3000.0	2.78	1.93	15
265.0	4582.0	3000.0	1.54	0.66	15
265.0	4585.0	3000.0	3.57	1.67	15
265.0	4588.0	3000.0	2.67	1.23	15
265.0	4591.0	3000.0	0.84	1.21	15
265.0	4594.0	3000.0	0.36	0.83	15
265.0	4597.0	3000.0	0.10	0.11	15
265.0	4600.0	3000.0	0.09	0.11	15
265.0	4603.0	3000.0	0.02	0.06	15
265.0	4606.0	3000.0	0.02	0.07	15
265.0	4609.0	3000.0	0.04	0.10	15
265.0	4612.0	3000.0	0.08	0.11	15
265.0	4615.0	3000.0	0.09	0.11	15
265.0	4618.0	3000.0	0.17	0.14	15
265.0	4621.0	3000.0	0.15	0.11	15
265.0	4624.0	3000.0	0.17	0.09	15
265.0	4627.0	3000.0	0.16	0.08	15
265.0	4630.0	3000.0	1.85	0.73	15
265.0	4633.0	3000.0	0.18	0.09	15
265.0	4636.0	3000.0	0.24	0.39	15
265.0	4639.0	3000.0	3.55	0.67	15
265.0	4642.0	3000.0	2.15	0.77	15
265.0	4645.0	3000.0	0.10	0.07	15
265.0	4648.0	3000.0	0.19	0.10	15
265.0	4651.0	3000.0	0.02	0.05	15
265.0	4654.0	3000.0	0.18	0.10	15
268.0	4576.0	3000.0	0.60	0.18	15
268.0	4579.0	3000.0	1.93	1.80	15
268.0	4582.0	3000.0	0.38	0.45	15
268.0	4585.0	3000.0	6.75	1.63	15
268.0	4588.0	3000.0	0.30	0.33	15
268.0	4591.0	3000.0	0.70	0.90	15

```
268.0 4594.0 3000.0      0.51      0.87      15
268.0 4597.0 3000.0      1.09      0.29      15
268.0 4600.0 3000.0      1.08      0.29      15
268.0 4603.0 3000.0      0.02      0.06      15
268.0 4606.0 3000.0      0.05      0.07      15
268.0 4609.0 3000.0      0.05      0.10      15
268.0 4612.0 3000.0      0.08      0.11      15
268.0 4615.0 3000.0      0.09      0.11      15
268.0 4618.0 3000.0      0.17      0.14      15
268.0 4621.0 3000.0      0.15      0.11      15
268.0 4624.0 3000.0      0.17      0.09      15
268.0 4627.0 3000.0      0.16      0.08      15
268.0 4630.0 3000.0      1.85      0.73      15
268.0 4633.0 3000.0      0.18      0.09      15
268.0 4636.0 3000.0      0.24      0.39      15
268.0 4639.0 3000.0      3.55      0.67      15
268.0 4642.0 3000.0      2.15      0.77      15
268.0 4645.0 3000.0      0.10      0.07      15
268.0 4648.0 3000.0      0.19      0.10      15
268.0 4651.0 3000.0      0.02      0.05      15
268.0 4654.0 3000.0      0.18      0.10      15
271.0 4576.0 3000.0      0.03      0.01      15
271.0 4579.0 3000.0      0.64      0.50      15
271.0 4582.0 3000.0      0.16      0.22      15
271.0 4585.0 3000.0      0.14      0.18      15
271.0 4588.0 3000.0      0.32      0.34      15
271.0 4591.0 3000.0      1.35      0.35      15
271.0 4594.0 3000.0      0.60      1.21      15
271.0 4597.0 3000.0      2.00      0.96      15
271.0 4600.0 3000.0      0.31      0.16      15
271.0 4603.0 3000.0      0.11      0.08      15
271.0 4606.0 3000.0      0.09      0.09      15
271.0 4609.0 3000.0      0.04      0.10      15
271.0 4612.0 3000.0      0.04      0.10      15
271.0 4615.0 3000.0      0.09      0.11      15
271.0 4618.0 3000.0      0.21      0.15      15
271.0 4621.0 3000.0      0.15      0.11      15
271.0 4624.0 3000.0      0.05      0.06      15
271.0 4627.0 3000.0      1.91      0.40      15
271.0 4630.0 3000.0      0.32      0.38      15
271.0 4633.0 3000.0      0.28      0.31      15
271.0 4636.0 3000.0      2.12      0.75      15
271.0 4639.0 3000.0      0.09      0.07      15
271.0 4642.0 3000.0      0.39      0.47      15
271.0 4645.0 3000.0      0.07      0.07      15
271.0 4648.0 3000.0      1.32      0.47      15
271.0 4651.0 3000.0      0.40      0.13      15
271.0 4654.0 3000.0      0.33      0.14      15
274.0 4576.0 3000.0      0.00      0.00      15
274.0 4579.0 3000.0      0.10      0.03      15
274.0 4582.0 3000.0      0.95      0.62      15
274.0 4585.0 3000.0      0.04      0.05      15
274.0 4588.0 3000.0      2.96      0.61      15
274.0 4591.0 3000.0      0.41      0.35      15
274.0 4594.0 3000.0      0.06      0.11      15
274.0 4597.0 3000.0      1.29      1.90      15
274.0 4600.0 3000.0      0.66      1.40      15
274.0 4603.0 3000.0      0.28      0.13      15
274.0 4606.0 3000.0      0.07      0.08      15
274.0 4609.0 3000.0      0.08      0.14      15
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CDC • CONTROL DATA   MANCHESTER CT

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274.0 4612.0 3000.0     0.24     0.26     15
274.0 4615.0 3000.0     0.23     0.15     15
274.0 4618.0 3000.0     0.56     0.32     15
274.0 4621.0 3000.0     0.08     0.18     15
274.0 4624.0 3000.0     0.08     0.20     15
274.0 4627.0 3000.0     0.16     0.24     15
274.0 4630.0 3000.0     0.10     0.07     15
274.0 4633.0 3000.0     0.56     0.60     15
274.0 4636.0 3000.0     0.28     0.30     15
274.0 4639.0 3000.0     0.14     0.09     15
274.0 4642.0 3000.0     0.74     0.58     15
274.0 4645.0 3000.0     1.66     0.50     15
274.0 4648.0 3000.0     5.76     1.49     15
274.0 4651.0 3000.0     0.16     0.39     15
274.0 4654.0 3000.0     0.65     0.24     15
277.0 4576.0 3000.0     0.00     0.00     15
277.0 4579.0 3000.0     0.02     0.01     15
277.0 4582.0 3000.0     0.79     0.32     15
277.0 4585.0 3000.0     0.36     0.66     15
277.0 4588.0 3000.0     0.43     0.40     15
277.0 4591.0 3000.0     1.51     0.84     15
277.0 4594.0 3000.0     0.15     0.24     15
277.0 4597.0 3000.0     0.50     0.46     15
277.0 4600.0 3000.0     0.09     0.12     15
277.0 4603.0 3000.0     0.88     2.13     15
277.0 4606.0 3000.0     1.11     1.83     15
277.0 4609.0 3000.0     0.78     1.06     15
277.0 4612.0 3000.0     0.06     0.10     15
277.0 4615.0 3000.0     0.38     0.19     15
277.0 4618.0 3000.0     0.36     0.43     15
277.0 4621.0 3000.0     0.45     0.20     15
277.0 4624.0 3000.0     0.10     0.08     15
277.0 4627.0 3000.0     0.97     0.37     15
277.0 4630.0 3000.0     0.20     0.11     15
277.0 4633.0 3000.0     0.91     1.28     15
277.0 4636.0 3000.0     0.19     0.17     15
277.0 4639.0 3000.0     0.67     0.33     15
277.0 4642.0 3000.0     1.27     1.26     15
277.0 4645.0 3000.0     0.72     0.84     15
277.0 4648.0 3000.0     4.30     1.28     15
277.0 4651.0 3000.0     0.32     0.14     15
277.0 4654.0 3000.0     0.02     0.05     15
280.0 4576.0 3000.0     0.00     0.00     15
280.0 4579.0 3000.0     0.01     0.00     15
280.0 4582.0 3000.0     0.65     0.30     15
280.0 4585.0 3000.0     0.49     0.66     15
280.0 4588.0 3000.0     0.11     0.09     15
280.0 4591.0 3000.0     1.92     0.52     15
280.0 4594.0 3000.0     0.28     0.48     15
280.0 4597.0 3000.0     0.22     0.29     15
280.0 4600.0 3000.0     0.12     0.11     15
280.0 4603.0 3000.0     0.12     0.10     15
280.0 4606.0 3000.0     0.14     0.21     15
280.0 4609.0 3000.0     0.62     1.26     15
280.0 4612.0 3000.0     0.78     1.57     15
280.0 4615.0 3000.0     1.05     0.39     15
280.0 4618.0 3000.0     2.54     1.03     15
280.0 4621.0 3000.0     0.30     0.16     15
280.0 4624.0 3000.0     0.19     0.11     15
280.0 4627.0 3000.0     1.06     0.23     15
```

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280.0 4630.0 3000.0     0.63     0.24     15
280.0 4633.0 3000.0     2.04     1.49     15
280.0 4636.0 3000.0     1.05     0.25     15
280.0 4639.0 3000.0     1.22     0.50     15
280.0 4642.0 3000.0     0.48     0.39     15
280.0 4645.0 3000.0     3.54     1.05     15
280.0 4648.0 3000.0     1.93     1.25     15
280.0 4651.0 3000.0     1.33     0.33     15
280.0 4654.0 3000.0     0.02     0.05     15
283.0 4576.0 3000.0     0.00     0.00     15
283.0 4579.0 3000.0     0.00     0.00     15
283.0 4582.0 3000.0     0.15     0.12     15
283.0 4585.0 3000.0     0.48     0.80     15
283.0 4588.0 3000.0     0.15     0.17     15
283.0 4591.0 3000.0     0.05     0.14     15
283.0 4594.0 3000.0     0.36     0.47     15
283.0 4597.0 3000.0     0.22     0.29     15
283.0 4600.0 3000.0     0.09     0.08     15
283.0 4603.0 3000.0     0.08     0.08     15
283.0 4606.0 3000.0     0.13     0.18     15
283.0 4609.0 3000.0     0.05     0.10     15
283.0 4612.0 3000.0     1.36     1.74     15
283.0 4615.0 3000.0     3.42     1.98     15
283.0 4618.0 3000.0     9.18     2.15     15
283.0 4621.0 3000.0     0.63     0.24     15
283.0 4624.0 3000.0     0.47     0.15     15
283.0 4627.0 3000.0     0.26     0.15     15
283.0 4630.0 3000.0     0.14     0.21     15
283.0 4633.0 3000.0     2.86     1.75     15
283.0 4636.0 3000.0     1.58     0.45     15
283.0 4639.0 3000.0     0.63     0.54     15
283.0 4642.0 3000.0     0.07     0.08     15
283.0 4645.0 3000.0     0.12     0.10     15
283.0 4648.0 3000.0     0.72     0.77     15
283.0 4651.0 3000.0     0.80     0.66     15
283.0 4654.0 3000.0     0.94     0.70     15
286.0 4576.0 3000.0     0.00     0.00     15
286.0 4579.0 3000.0     0.00     0.00     15
286.0 4582.0 3000.0     0.79     0.30     15
286.0 4585.0 3000.0     0.86     0.92     15
286.0 4588.0 3000.0     1.28     0.56     15
286.0 4591.0 3000.0     0.21     0.19     15
286.0 4594.0 3000.0     2.55     1.04     15
286.0 4597.0 3000.0     0.55     0.27     15
286.0 4600.0 3000.0     0.78     0.31     15
286.0 4603.0 3000.0     0.67     0.30     15
286.0 4606.0 3000.0     0.15     0.13     15
286.0 4609.0 3000.0     0.17     0.24     15
286.0 4612.0 3000.0     2.14     2.17     15
286.0 4615.0 3000.0     9.30     4.31     15
286.0 4618.0 3000.0    17.33     5.71     15
286.0 4621.0 3000.0     9.28     2.25     15
286.0 4624.0 3000.0     0.87     0.69     15
286.0 4627.0 3000.0     2.54     1.07     15
286.0 4630.0 3000.0     3.80     0.99     15
286.0 4633.0 3000.0     1.52     1.29     15
286.0 4636.0 3000.0     4.17     1.93     15
286.0 4639.0 3000.0     2.30     1.22     15
286.0 4642.0 3000.0     0.61     0.53     15
286.0 4645.0 3000.0     0.67     0.94     15
```

```
286.0 4648.0 3000.0      3.37        1.28        15
286.0 4651.0 3000.0     15.09        4.36        15
286.0 4654.0 3000.0     11.10        3.54        15
289.0 4576.0 3000.0      0.00        0.00        15
289.0 4579.0 3000.0      0.00        0.00        15
289.0 4582.0 3000.0      1.80        1.20        15
289.0 4585.0 3000.0      1.03        0.43        15
289.0 4588.0 3000.0      4.38        2.08        15
289.0 4591.0 3000.0      6.98        2.21        15
289.0 4594.0 3000.0      2.81        1.20        15
289.0 4597.0 3000.0      0.16        0.19        15
289.0 4600.0 3000.0      0.26        0.28        15
289.0 4603.0 3000.0      0.46        0.45        15
289.0 4606.0 3000.0      0.82        1.22        15
289.0 4609.0 3000.0      3.49        1.02        15
289.0 4612.0 3000.0      2.76        0.93        15
289.0 4615.0 3000.0     14.24        5.82        15
289.0 4618.0 3000.0     26.30        9.09        15
289.0 4621.0 3000.0     10.15        3.80        15
289.0 4624.0 3000.0      0.99        0.91        15
289.0 4627.0 3000.0      1.16        1.37        15
289.0 4630.0 3000.0      2.39        1.56        15
289.0 4633.0 3000.0      5.21        2.04        15
289.0 4636.0 3000.0      3.83        2.48        15
289.0 4639.0 3000.0      2.71        1.55        15
289.0 4642.0 3000.0      6.13        2.12        15
289.0 4645.0 3000.0      0.44        0.60        15
289.0 4648.0 3000.0      1.87        1.90        15
289.0 4651.0 3000.0     27.10        8.36        15
289.0 4654.0 3000.0      2.20        2.69        15
292.0 4576.0 3000.0      0.00        0.00        15
292.0 4579.0 3000.0      0.08        0.02        15
292.0 4582.0 3000.0      0.95        0.90        15
292.0 4585.0 3000.0      3.78        2.21        15
292.0 4588.0 3000.0      3.82        3.60        15
292.0 4591.0 3000.0      1.57        2.48        15
292.0 4594.0 3000.0      2.31        2.84        15
292.0 4597.0 3000.0      0.61        1.55        15
292.0 4600.0 3000.0      3.26        2.78        15
292.0 4603.0 3000.0      7.02        4.22        15
292.0 4606.0 3000.0      2.05        1.65        15
292.0 4609.0 3000.0     19.46        7.14        15
292.0 4612.0 3000.0      6.12        4.56        15
292.0 4615.0 3000.0      3.16        5.59        15
292.0 4618.0 3000.0      6.77        6.06        15
292.0 4621.0 3000.0     15.72        7.80        15
292.0 4624.0 3000.0      6.66        4.66        15
292.0 4627.0 3000.0     14.08        5.49        15
292.0 4630.0 3000.0      6.39        4.02        15
292.0 4633.0 3000.0     14.26        5.63        15
292.0 4636.0 3000.0     20.25        6.30        15
292.0 4639.0 3000.0      3.03        1.55        15
292.0 4642.0 3000.0     15.36        3.66        15
292.0 4645.0 3000.0      3.68        1.88        15
292.0 4648.0 3000.0      3.27        2.72        15
292.0 4651.0 3000.0     30.34        9.94        15
292.0 4654.0 3000.0     21.45        7.85        15
295.0 4576.0 3000.0      0.00        0.00        15
295.0 4579.0 3000.0      0.00        0.00        15
295.0 4582.0 3000.0      0.00        0.00        15
```

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295.0 4585.0 3000.0    0.00    0.00    15
295.0 4588.0 3000.0    0.05    0.02    15
295.0 4591.0 3000.0    0.84    0.59    15
295.0 4594.0 3000.0    2.44    1.08    15
295.0 4597.0 3000.0    4.90    1.66    15
295.0 4600.0 3000.0    3.01    1.90    15
295.0 4603.0 3000.0    2.57    1.24    15
295.0 4606.0 3000.0    6.56    2.52    15
295.0 4609.0 3000.0    3.91    1.95    15
295.0 4612.0 3000.0    4.53    1.90    15
295.0 4615.0 3000.0    5.64    4.02    15
295.0 4618.0 3000.0   16.18    8.68    15
295.0 4621.0 3000.0   31.59   10.75    15
295.0 4624.0 3000.0   23.71   10.91    15
295.0 4627.0 3000.0   46.91   18.20    15
295.0 4630.0 3000.0   54.46   20.00    15
295.0 4633.0 3000.0   39.14   19.20    15
295.0 4636.0 3000.0   15.33    7.81    15
295.0 4639.0 3000.0    1.16    1.56    15
295.0 4642.0 3000.0    2.20    1.99    15
295.0 4645.0 3000.0    8.28    4.02    15
295.0 4648.0 3000.0    6.67    3.46    15
295.0 4651.0 3000.0    1.57    1.82    15
295.0 4654.0 3000.0    4.43    2.48    15
298.0 4576.0 3000.0    0.00    0.00    15
298.0 4579.0 3000.0    0.00    0.00    15
298.0 4582.0 3000.0    0.00    0.00    15
298.0 4585.0 3000.0    0.00    0.00    15
298.0 4588.0 3000.0    0.00    0.00    15
298.0 4591.0 3000.0    1.08    0.38    15
298.0 4594.0 3000.0    0.58    0.28    15
298.0 4597.0 3000.0    0.98    0.52    15
298.0 4600.0 3000.0    0.25    0.09    15
298.0 4603.0 3000.0    0.00    0.00    15
298.0 4606.0 3000.0    1.16    0.32    15
298.0 4609.0 3000.0    2.91    0.76    15
298.0 4612.0 3000.0    0.27    0.17    15
298.0 4615.0 3000.0    2.00    1.62    15
298.0 4618.0 3000.0   11.63    7.83    15
298.0 4621.0 3000.0   14.37    8.98    15
298.0 4624.0 3000.0   42.99   12.98    15
298.0 4627.0 3000.0   58.94   22.23    15
298.0 4630.0 3000.0   66.45   23.64    15
298.0 4633.0 3000.0   69.94   24.40    15
298.0 4636.0 3000.0   45.95   17.65    15
298.0 4639.0 3000.0   29.45    8.58    15
298.0 4642.0 3000.0   13.58    4.57    15
298.0 4645.0 3000.0    4.81    2.97    15
298.0 4648.0 3000.0    1.39    1.37    15
298.0 4651.0 3000.0    0.89    1.19    15
298.0 4654.0 3000.0    0.91    1.20    15
301.0 4576.0 3000.0    0.00    0.00    15
301.0 4579.0 3000.0    0.00    0.00    15
301.0 4582.0 3000.0    0.00    0.00    15
301.0 4585.0 3000.0    0.00    0.00    15
301.0 4588.0 3000.0    0.00    0.00    15
301.0 4591.0 3000.0    9.30    1.59    15
301.0 4594.0 3000.0    7.85    1.25    15
301.0 4597.0 3000.0    4.52    1.75    15
301.0 4600.0 3000.0    0.51    0.23    15
```

```
301.0 4603.0 3000.0    0.32    0.16    15
301.0 4606.0 3000.0    0.03    0.01    15
301.0 4609.0 3000.0    0.00    0.00    15
301.0 4612.0 3000.0    0.02    0.01    15
301.0 4615.0 3000.0    2.07    2.12    15
301.0 4618.0 3000.0    4.61    5.00    15
301.0 4621.0 3000.0    4.98    2.14    15
301.0 4624.0 3000.0   17.09    4.57    15
301.0 4627.0 3000.0   29.13    6.62    15
301.0 4630.0 3000.0   26.24    9.91    15
301.0 4633.0 3000.0   50.82   17.93    15
301.0 4636.0 3000.0   62.38   19.73    15
301.0 4639.0 3000.0   59.12   16.49    15
301.0 4642.0 3000.0    7.69    2.93    15
301.0 4645.0 3000.0    4.25    1.72    15
301.0 4648.0 3000.0    1.49    1.14    15
301.0 4651.0 3000.0    0.48    0.77    15
301.0 4654.0 3000.0    0.42    0.75    15
304.0 4576.0 3000.0    0.00    0.00    15
304.0 4579.0 3000.0    0.00    0.00    15
304.0 4582.0 3000.0    0.00    0.00    15
304.0 4585.0 3000.0    0.00    0.00    15
304.0 4588.0 3000.0    0.00    0.00    15
304.0 4591.0 3000.0    1.71    1.76    15
304.0 4594.0 3000.0    8.19    2.58    15
304.0 4597.0 3000.0    8.41    1.89    15
304.0 4600.0 3000.0    7.99    0.73    15
304.0 4603.0 3000.0    5.79    0.53    15
304.0 4606.0 3000.0    1.09    0.23    15
304.0 4609.0 3000.0    0.09    0.02    15
304.0 4612.0 3000.0    2.92    0.29    15
304.0 4615.0 3000.0    4.28    0.44    15
304.0 4618.0 3000.0    3.68    0.36    15
304.0 4621.0 3000.0    6.78    1.64    15
304.0 4624.0 3000.0   12.37    6.39    15
304.0 4627.0 3000.0    8.66    5.25    15
304.0 4630.0 3000.0   22.15    6.61    15
304.0 4633.0 3000.0   23.89    7.99    15
304.0 4636.0 3000.0   18.96    8.41    15
304.0 4639.0 3000.0   18.18    6.97    15
304.0 4642.0 3000.0    2.54    1.93    15
304.0 4645.0 3000.0    1.82    1.44    15
304.0 4648.0 3000.0   10.91    3.47    15
304.0 4651.0 3000.0   12.73    3.89    15
304.0 4654.0 3000.0    1.72    1.13    15
307.0 4576.0 3000.0    0.00    0.00    15
307.0 4579.0 3000.0    0.00    0.00    15
307.0 4582.0 3000.0    0.00    0.00    15
307.0 4585.0 3000.0    0.00    0.00    15
307.0 4588.0 3000.0    0.00    0.00    15
307.0 4591.0 3000.0    4.92    1.68    15
307.0 4594.0 3000.0   10.17    4.02    15
307.0 4597.0 3000.0   11.93    5.94    15
307.0 4600.0 3000.0    4.13    2.14    15
307.0 4603.0 3000.0   13.34    2.78    15
307.0 4606.0 3000.0    8.73    0.87    15
307.0 4609.0 3000.0    7.12    0.66    15
307.0 4612.0 3000.0    0.19    0.09    15
307.0 4615.0 3000.0    1.47    0.50    15
307.0 4618.0 3000.0    1.49    0.58    15
```

```
307.0 4621.0 3000.0     8.00     3.49     15
307.0 4624.0 3000.0     2.33     1.18     15
307.0 4627.0 3000.0     4.47     1.90     15
307.0 4630.0 3000.0     0.89     1.29     15
307.0 4633.0 3000.0     1.19     1.26     15
307.0 4636.0 3000.0     0.73     1.05     15
307.0 4639.0 3000.0     3.25     1.91     15
307.0 4642.0 3000.0     6.68     2.75     15
307.0 4645.0 3000.0    13.89     3.80     15
307.0 4648.0 3000.0    11.39     3.26     15
307.0 4651.0 3000.0    11.61     3.34     15
307.0 4654.0 3000.0     2.11     1.68     15
310.0 4576.0 3000.0     0.00     0.00     15
310.0 4579.0 3000.0     0.00     0.00     15
310.0 4582.0 3000.0     0.00     0.00     15
310.0 4585.0 3000.0     0.00     0.00     15
310.0 4588.0 3000.0     0.00     0.00     15
310.0 4591.0 3000.0     0.31     0.06     15
310.0 4594.0 3000.0     1.47     0.58     15
310.0 4597.0 3000.0     1.45     0.68     15
310.0 4600.0 3000.0     0.89     1.20     15
310.0 4603.0 3000.0     3.79     2.16     15
310.0 4606.0 3000.0     3.26     3.22     15
310.0 4609.0 3000.0    19.69     6.19     15
310.0 4612.0 3000.0     3.85     1.94     15
310.0 4615.0 3000.0    21.81     6.46     15
310.0 4618.0 3000.0     7.71     4.11     15
310.0 4621.0 3000.0    13.86     4.65     15
310.0 4624.0 3000.0     2.56     1.31     15
310.0 4627.0 3000.0     0.15     0.43     15
310.0 4630.0 3000.0     0.42     0.44     15
310.0 4633.0 3000.0     0.37     0.44     15
310.0 4636.0 3000.0     0.29     0.42     15
310.0 4639.0 3000.0     0.38     0.44     15
310.0 4642.0 3000.0     6.61     2.66     15
310.0 4645.0 3000.0    28.62     6.65     15
310.0 4648.0 3000.0     1.29     1.40     15
310.0 4651.0 3000.0     1.20     0.73     15
310.0 4654.0 3000.0     0.97     1.82     15
313.0 4576.0 3000.0     0.00     0.00     15
313.0 4579.0 3000.0     0.00     0.00     15
313.0 4582.0 3000.0     0.00     0.00     15
313.0 4585.0 3000.0     0.00     0.00     15
313.0 4588.0 3000.0     0.00     0.00     15
313.0 4591.0 3000.0     0.00     0.00     15
313.0 4594.0 3000.0     0.01     0.00     15
313.0 4597.0 3000.0     0.33     0.14     15
313.0 4600.0 3000.0     0.44     0.19     15
313.0 4603.0 3000.0     0.40     0.18     15
313.0 4606.0 3000.0     0.47     0.16     15
313.0 4609.0 3000.0     6.77     3.61     15
313.0 4612.0 3000.0     3.40     1.02     15
313.0 4615.0 3000.0     1.87     0.22     15
313.0 4618.0 3000.0     1.15     0.56     15
313.0 4621.0 3000.0     1.49     1.10     15
313.0 4624.0 3000.0     3.26     1.51     15
313.0 4627.0 3000.0     0.59     0.59     15
313.0 4630.0 3000.0     0.78     0.54     15
313.0 4633.0 3000.0     2.72     0.88     15
313.0 4636.0 3000.0     0.62     0.50     15
```

```
313.0 4639.0 3000.0      0.86      0.56       15
313.0 4642.0 3000.0      1.67      1.55       15
313.0 4645.0 3000.0      2.06      1.28       15
313.0 4648.0 3000.0      0.69      0.47       15
313.0 4651.0 3000.0      0.83      0.40       15
313.0 4654.0 3000.0      4.29      1.25       15
316.0 4576.0 3000.0      0.00      0.00       15
316.0 4579.0 3000.0      0.00      0.00       15
316.0 4582.0 3000.0      0.00      0.00       15
316.0 4585.0 3000.0      0.00      0.00       15
316.0 4588.0 3000.0      0.00      0.00       15
316.0 4591.0 3000.0      0.51      0.23       15
316.0 4594.0 3000.0      0.63      0.29       15
316.0 4597.0 3000.0      0.42      0.26       15
316.0 4600.0 3000.0      0.26      0.22       15
316.0 4603.0 3000.0      0.78      0.56       15
316.0 4606.0 3000.0      1.13      0.75       15
316.0 4609.0 3000.0      0.84      0.59       15
316.0 4612.0 3000.0      4.27      4.21       15
316.0 4615.0 3000.0     41.44      7.96       15
316.0 4618.0 3000.0     31.52      6.05       15
316.0 4621.0 3000.0      9.92      3.55       15
316.0 4624.0 3000.0      1.73      1.25       15
316.0 4627.0 3000.0      1.67      0.95       15
316.0 4630.0 3000.0      0.24      0.38       15
316.0 4633.0 3000.0      0.65      0.48       15
316.0 4636.0 3000.0      0.68      0.48       15
316.0 4639.0 3000.0      0.80      0.74       15
316.0 4642.0 3000.0      0.48      0.52       15
316.0 4645.0 3000.0      6.71      1.59       15
316.0 4648.0 3000.0      2.94      0.97       15
316.0 4651.0 3000.0      3.24      0.97       15
316.0 4654.0 3000.0     20.37      4.10       15
319.0 4576.0 3000.0      0.00      0.00       15
319.0 4579.0 3000.0      0.00      0.00       15
319.0 4582.0 3000.0      0.00      0.00       15
319.0 4585.0 3000.0      0.00      0.00       15
319.0 4588.0 3000.0      0.00      0.00       15
319.0 4591.0 3000.0      0.15      0.04       15
319.0 4594.0 3000.0      0.43      0.22       15
319.0 4597.0 3000.0      0.19      0.18       15
319.0 4600.0 3000.0      0.14      0.18       15
319.0 4603.0 3000.0      0.49      0.48       15
319.0 4606.0 3000.0      0.56      0.58       15
319.0 4609.0 3000.0      1.59      0.85       15
319.0 4612.0 3000.0      2.04      2.03       15
319.0 4615.0 3000.0     46.24     12.25       15
319.0 4618.0 3000.0     66.96     13.46       15
319.0 4621.0 3000.0     21.45      6.43       15
319.0 4624.0 3000.0      4.06      2.35       15
319.0 4627.0 3000.0      0.78      1.15       15
319.0 4630.0 3000.0      2.07      0.65       15
319.0 4633.0 3000.0      0.57      0.42       15
319.0 4636.0 3000.0      1.91      0.67       15
319.0 4639.0 3000.0      0.85      1.01       15
319.0 4642.0 3000.0      1.49      0.90       15
319.0 4645.0 3000.0      2.69      0.83       15
319.0 4648.0 3000.0      1.29      0.62       15
319.0 4651.0 3000.0      0.74      0.49       15
319.0 4654.0 3000.0      0.73      0.46       15
```

b. 1980

```
262.0 4576.0 3000.0    1.75    0.66    15
262.0 4579.0 3000.0    5.28    1.52    15
262.0 4582.0 3000.0   18.80    5.65    15
262.0 4585.0 3000.0    4.48    1.82    15
262.0 4588.0 3000.0    0.36    0.72    15
262.0 4591.0 3000.0    0.86    1.24    15
262.0 4594.0 3000.0    0.30    0.83    15
262.0 4597.0 3000.0    0.10    0.12    15
262.0 4600.0 3000.0    0.10    0.11    15
262.0 4603.0 3000.0    0.02    0.06    15
262.0 4606.0 3000.0    0.02    0.07    15
262.0 4609.0 3000.0    0.04    0.10    15
262.0 4612.0 3000.0    0.08    0.11    15
262.0 4615.0 3000.0    0.10    0.12    15
262.0 4618.0 3000.0    0.17    0.14    15
262.0 4621.0 3000.0    0.16    0.11    15
262.0 4624.0 3000.0    0.18    0.09    15
262.0 4627.0 3000.0    0.16    0.09    15
262.0 4630.0 3000.0    1.90    0.75    15
262.0 4633.0 3000.0    0.19    0.10    15
262.0 4636.0 3000.0    0.25    0.40    15
262.0 4639.0 3000.0    3.56    0.67    15
262.0 4642.0 3000.0    2.16    0.78    15
262.0 4645.0 3000.0    0.10    0.07    15
262.0 4648.0 3000.0    0.20    0.10    15
262.0 4651.0 3000.0    0.02    0.05    15
262.0 4654.0 3000.0    0.19    0.10    15
265.0 4576.0 3000.0    0.39    0.19    15
265.0 4579.0 3000.0    2.93    2.00    15
265.0 4582.0 3000.0    1.57    0.67    15
265.0 4585.0 3000.0    3.59    1.70    15
265.0 4588.0 3000.0    2.69    1.24    15
265.0 4591.0 3000.0    0.96    1.24    15
265.0 4594.0 3000.0    0.37    0.85    15
265.0 4597.0 3000.0    0.10    0.12    15
265.0 4600.0 3000.0    0.10    0.11    15
265.0 4603.0 3000.0    0.02    0.06    15
265.0 4606.0 3000.0    0.02    0.07    15
265.0 4609.0 3000.0    0.04    0.10    15
265.0 4612.0 3000.0    0.08    0.11    15
265.0 4615.0 3000.0    0.10    0.12    15
265.0 4618.0 3000.0    0.17    0.14    15
265.0 4621.0 3000.0    0.16    0.11    15
265.0 4624.0 3000.0    0.18    0.09    15
265.0 4627.0 3000.0    0.16    0.09    15
265.0 4630.0 3000.0    1.90    0.75    15
265.0 4633.0 3000.0    0.19    0.10    15
265.0 4636.0 3000.0    0.25    0.40    15
265.0 4639.0 3000.0    3.56    0.67    15
265.0 4642.0 3000.0    2.16    0.79    15
265.0 4645.0 3000.0    0.10    0.07    15
265.0 4648.0 3000.0    0.20    0.10    15
265.0 4651.0 3000.0    0.02    0.05    15
265.0 4654.0 3000.0    0.18    0.10    15
268.0 4576.0 3000.0    0.65    0.20    15
268.0 4579.0 3000.0    2.07    1.88    15
268.0 4582.0 3000.0    0.42    0.47    15
268.0 4585.0 3000.0    6.76    1.64    15
268.0 4588.0 3000.0    0.30    0.33    15
268.0 4591.0 3000.0    0.71    0.92    15
```

CDC • CONTROL DATA   MANCHESTER CT

268.0	4594.0	3000.0	0.52	0.89	15
268.0	4597.0	3000.0	1.09	0.30	15
268.0	4600.0	3000.0	1.09	0.30	15
268.0	4603.0	3000.0	0.02	0.06	15
268.0	4606.0	3000.0	0.05	0.08	15
268.0	4609.0	3000.0	0.05	0.10	15
268.0	4612.0	3000.0	0.08	0.11	15
268.0	4615.0	3000.0	0.10	0.12	15
268.0	4618.0	3000.0	0.17	0.14	15
268.0	4621.0	3000.0	0.16	0.11	15
268.0	4624.0	3000.0	0.18	0.09	15
268.0	4627.0	3000.0	0.16	0.09	15
268.0	4630.0	3000.0	1.90	0.75	15
268.0	4633.0	3000.0	0.19	0.10	15
268.0	4636.0	3000.0	0.25	0.40	15
268.0	4639.0	3000.0	3.56	0.67	15
268.0	4642.0	3000.0	2.16	0.78	15
268.0	4645.0	3000.0	0.10	0.07	15
268.0	4648.0	3000.0	0.20	0.10	15
268.0	4651.0	3000.0	0.02	0.05	15
268.0	4654.0	3000.0	0.18	0.10	15
271.0	4576.0	3000.0	0.03	0.01	15
271.0	4579.0	3000.0	0.68	0.52	15
271.0	4582.0	3000.0	0.17	0.23	15
271.0	4585.0	3000.0	0.15	0.18	15
271.0	4588.0	3000.0	0.33	0.35	15
271.0	4591.0	3000.0	1.37	0.36	15
271.0	4594.0	3000.0	0.62	1.24	15
271.0	4597.0	3000.0	2.01	0.98	15
271.0	4600.0	3000.0	0.32	0.16	15
271.0	4603.0	3000.0	0.11	0.08	15
271.0	4606.0	3000.0	0.10	0.09	15
271.0	4609.0	3000.0	0.04	0.10	15
271.0	4612.0	3000.0	0.04	0.10	15
271.0	4615.0	3000.0	0.10	0.12	15
271.0	4618.0	3000.0	0.22	0.15	15
271.0	4621.0	3000.0	0.16	0.11	15
271.0	4624.0	3000.0	0.05	0.06	15
271.0	4627.0	3000.0	1.92	0.40	15
271.0	4630.0	3000.0	0.33	0.39	15
271.0	4633.0	3000.0	0.29	0.32	15
271.0	4636.0	3000.0	2.13	0.76	15
271.0	4639.0	3000.0	0.10	0.08	15
271.0	4642.0	3000.0	0.40	0.48	15
271.0	4645.0	3000.0	0.07	0.07	15
271.0	4648.0	3000.0	1.34	0.48	15
271.0	4651.0	3000.0	0.40	0.14	15
271.0	4654.0	3000.0	0.35	0.15	15
274.0	4576.0	3000.0	0.00	0.00	15
274.0	4579.0	3000.0	0.11	0.04	15
274.0	4582.0	3000.0	0.98	0.64	15
274.0	4585.0	3000.0	0.04	0.05	15
274.0	4588.0	3000.0	3.11	0.64	15
274.0	4591.0	3000.0	0.43	0.36	15
274.0	4594.0	3000.0	0.06	0.11	15
274.0	4597.0	3000.0	1.35	1.96	15
274.0	4600.0	3000.0	0.68	1.44	15
274.0	4603.0	3000.0	0.29	0.13	15
274.0	4606.0	3000.0	0.08	0.08	15
274.0	4609.0	3000.0	0.08	0.14	15

CDC • CONTROL DATA MANCHESTER CT

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274.0 4612.0 3000.0      0.25      0.26      15
274.0 4615.0 3000.0      0.24      0.16      15
274.0 4618.0 3000.0      0.60      0.33      15
274.0 4621.0 3000.0      0.08      0.19      15
274.0 4624.0 3000.0      0.09      0.21      15
274.0 4627.0 3000.0      0.17      0.25      15
274.0 4630.0 3000.0      0.10      0.07      15
274.0 4633.0 3000.0      0.58      0.61      15
274.0 4636.0 3000.0      0.29      0.31      15
274.0 4639.0 3000.0      0.15      0.09      15
274.0 4642.0 3000.0      0.77      0.60      15
274.0 4645.0 3000.0      1.70      0.51      15
274.0 4648.0 3000.0      5.84      1.52      15
274.0 4651.0 3000.0      0.17      0.10      15
274.0 4654.0 3000.0      0.69      0.25      15
277.0 4576.0 3000.0      0.00      0.00      15
277.0 4579.0 3000.0      0.02      0.01      15
277.0 4582.0 3000.0      0.82      0.33      15
277.0 4585.0 3000.0      0.38      0.68      15
277.0 4588.0 3000.0      0.45      0.42      15
277.0 4591.0 3000.0      1.54      0.86      15
277.0 4594.0 3000.0      0.15      0.24      15
277.0 4597.0 3000.0      0.52      0.48      15
277.0 4600.0 3000.0      0.09      0.12      15
277.0 4603.0 3000.0      0.91      2.18      15
277.0 4606.0 3000.0      1.16      1.89      15
277.0 4609.0 3000.0      0.81      1.09      15
277.0 4612.0 3000.0      0.06      0.11      15
277.0 4615.0 3000.0      0.41      0.20      15
277.0 4618.0 3000.0      0.37      0.44      15
277.0 4621.0 3000.0      0.47      0.21      15
277.0 4624.0 3000.0      0.11      0.09      15
277.0 4627.0 3000.0      0.98      0.38      15
277.0 4630.0 3000.0      0.21      0.12      15
277.0 4633.0 3000.0      0.93      1.31      15
277.0 4636.0 3000.0      0.20      0.18      15
277.0 4639.0 3000.0      0.70      0.34      15
277.0 4642.0 3000.0      1.31      1.29      15
277.0 4645.0 3000.0      0.74      0.86      15
277.0 4648.0 3000.0      4.39      1.32      15
277.0 4651.0 3000.0      0.34      0.14      15
277.0 4654.0 3000.0      0.02      0.05      15
280.0 4576.0 3000.0      0.00      0.00      15
280.0 4579.0 3000.0      0.01      0.00      15
280.0 4582.0 3000.0      0.68      0.21      15
280.0 4585.0 3000.0      0.51      0.68      15
280.0 4588.0 3000.0      0.12      0.09      15
280.0 4591.0 3000.0      1.94      0.53      15
280.0 4594.0 3000.0      0.36      0.50      15
280.0 4597.0 3000.0      0.24      0.31      15
280.0 4600.0 3000.0      0.13      0.11      15
280.0 4603.0 3000.0      0.13      0.10      15
280.0 4606.0 3000.0      0.14      0.22      15
280.0 4609.0 3000.0      0.64      1.30      15
280.0 4612.0 3000.0      0.91      1.62      15
280.0 4615.0 3000.0      1.11      0.41      15
280.0 4618.0 3000.0      2.63      1.07      15
280.0 4621.0 3000.0      0.31      0.17      15
280.0 4624.0 3000.0      0.19      0.12      15
280.0 4627.0 3000.0      1.07      0.24      15
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CDC • CONTROL DATA   MANCHESTER CT

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280.0 4630.0 3000.0     0.65     0.25     15
280.0 4633.0 3000.0     2.07     1.53     15
280.0 4636.0 3000.0     1.06     0.26     15
280.0 4639.0 3000.0     1.22     0.51     15
280.0 4642.0 3000.0     0.49     0.40     15
280.0 4645.0 3000.0     3.59     1.07     15
280.0 4648.0 3000.0     1.98     1.28     15
280.0 4651.0 3000.0     1.36     0.33     15
280.0 4654.0 3000.0     0.02     0.05     15
283.0 4576.0 3000.0     0.00     0.00     15
283.0 4579.0 3000.0     0.00     0.00     15
283.0 4582.0 3000.0     0.16     0.12     15
283.0 4585.0 3000.0     0.50     0.82     15
283.0 4588.0 3000.0     0.16     0.18     15
283.0 4591.0 3000.0     0.05     0.15     15
283.0 4594.0 3000.0     0.37     0.48     15
283.0 4597.0 3000.0     0.24     0.30     15
283.0 4600.0 3000.0     0.10     0.08     15
283.0 4603.0 3000.0     0.09     0.08     15
283.0 4606.0 3000.0     0.14     0.19     15
283.0 4609.0 3000.0     0.05     0.10     15
283.0 4612.0 3000.0     1.44     1.80     15
283.0 4615.0 3000.0     3.56     2.04     15
283.0 4618.0 3000.0     9.29     2.19     15
283.0 4621.0 3000.0     0.66     0.25     15
283.0 4624.0 3000.0     0.48     0.15     15
283.0 4627.0 3000.0     0.27     0.15     15
283.0 4630.0 3000.0     0.14     0.22     15
283.0 4633.0 3000.0     2.89     1.79     15
283.0 4636.0 3000.0     1.61     0.46     15
283.0 4639.0 3000.0     0.65     0.56     15
283.0 4642.0 3000.0     0.08     0.08     15
283.0 4645.0 3000.0     0.12     0.10     15
283.0 4648.0 3000.0     0.74     0.79     15
283.0 4651.0 3000.0     0.82     0.67     15
283.0 4654.0 3000.0     0.97     0.72     15
286.0 4576.0 3000.0     0.00     0.00     15
286.0 4579.0 3000.0     0.00     0.00     15
286.0 4582.0 3000.0     0.83     0.32     15
286.0 4585.0 3000.0     0.90     0.95     15
286.0 4588.0 3000.0     1.31     0.58     15
286.0 4591.0 3000.0     0.22     0.20     15
286.0 4594.0 3000.0     2.61     1.07     15
286.0 4597.0 3000.0     0.60     0.29     15
286.0 4600.0 3000.0     0.81     0.32     15
286.0 4603.0 3000.0     0.70     0.31     15
286.0 4606.0 3000.0     0.16     0.13     15
286.0 4609.0 3000.0     0.17     0.25     15
286.0 4612.0 3000.0     2.19     2.23     15
286.0 4615.0 3000.0     9.65     4.46     15
286.0 4618.0 3000.0    17.68     5.86     15
286.0 4621.0 3000.0     9.41     2.30     15
286.0 4624.0 3000.0     0.90     0.71     15
286.0 4627.0 3000.0     2.61     1.11     15
286.0 4630.0 3000.0     3.82     0.90     15
286.0 4633.0 3000.0     1.58     1.33     15
286.0 4636.0 3000.0     4.31     2.00     15
286.0 4639.0 3000.0     2.42     1.27     15
286.0 4642.0 3000.0     0.65     0.55     15
286.0 4645.0 3000.0     0.68     0.96     15
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CDC • CONTROL DATA   MANCHESTER CT

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286.0 4648.0 3000.0     3.38      1.26      15
286.0 4651.0 3000.0    15.11      4.40      15
286.0 4654.0 3000.0     9.26      3.26      15
289.0 4576.0 3000.0     0.00      0.00      15
289.0 4579.0 3000.0     0.00      0.00      15
289.0 4582.0 3000.0     2.01      1.28      15
289.0 4585.0 3000.0     1.15      0.47      15
289.0 4588.0 3000.0     4.55      2.16      15
289.0 4591.0 3000.0     7.14      2.27      15
289.0 4594.0 3000.0     2.91      1.24      15
289.0 4597.0 3000.0     0.18      0.20      15
289.0 4600.0 3000.0     0.29      0.29      15
289.0 4603.0 3000.0     0.49      0.47      15
289.0 4606.0 3000.0     0.86      1.25      15
289.0 4609.0 3000.0     3.54      1.04      15
289.0 4612.0 3000.0     2.82      0.95      15
289.0 4615.0 3000.0    14.64      6.00      15
289.0 4618.0 3000.0    26.90      9.34      15
289.0 4621.0 3000.0    10.39      3.91      15
289.0 4624.0 3000.0     0.93      0.94      15
289.0 4627.0 3000.0     1.20      1.42      15
289.0 4630.0 3000.0     2.42      1.59      15
289.0 4633.0 3000.0     5.26      2.08      15
289.0 4636.0 3000.0     3.94      2.54      15
289.0 4639.0 3000.0     2.87      1.63      15
289.0 4642.0 3000.0     6.24      2.17      15
289.0 4645.0 3000.0     0.45      0.62      15
289.0 4648.0 3000.0     1.90      1.94      15
289.0 4651.0 3000.0    27.72      8.60      15
289.0 4654.0 3000.0     2.08      2.73      15
292.0 4576.0 3000.0     0.00      0.00      15
292.0 4579.0 3000.0     0.08      0.02      15
292.0 4582.0 3000.0     1.05      0.95      15
292.0 4585.0 3000.0     3.96      2.29      15
292.0 4588.0 3000.0     3.96      3.71      15
292.0 4591.0 3000.0     1.61      2.54      15
292.0 4594.0 3000.0     2.40      2.93      15
292.0 4597.0 3000.0     0.64      1.59      15
292.0 4600.0 3000.0     3.41      2.87      15
292.0 4603.0 3000.0     7.42      4.39      15
292.0 4606.0 3000.0     2.23      1.72      15
292.0 4609.0 3000.0    19.98      7.35      15
292.0 4612.0 3000.0     6.26      4.68      15
292.0 4615.0 3000.0     3.23      5.73      15
292.0 4618.0 3000.0     6.88      6.21      15
292.0 4621.0 3000.0    16.04      8.00      15
292.0 4624.0 3000.0     6.93      4.82      15
292.0 4627.0 3000.0    14.46      5.65      15
292.0 4630.0 3000.0     7.25      4.15      15
292.0 4633.0 3000.0    14.54      5.77      15
292.0 4636.0 3000.0    20.51      6.42      15
292.0 4639.0 3000.0     3.16      1.61      15
292.0 4642.0 3000.0    15.62      3.73      15
292.0 4645.0 3000.0     3.74      1.93      15
292.0 4648.0 3000.0     3.39      2.80      15
292.0 4651.0 3000.0    31.05     10.24      15
292.0 4654.0 3000.0    19.62      7.67      15
295.0 4576.0 3000.0     0.00      0.00      15
295.0 4579.0 3000.0     0.00      0.00      15
295.0 4582.0 3000.0     0.00      0.00      15
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CDC • CONTROL DATA MANCHESTER CT

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295.0 4585.0 3000.0      0.00      0.00        15
295.0 4588.0 3000.0      0.06      0.02        15
295.0 4591.0 3000.0      0.87      0.61        15
295.0 4594.0 3000.0      2.63      1.14        15
295.0 4597.0 3000.0      5.13      1.74        15
295.0 4600.0 3000.0      3.16      1.97        15
295.0 4603.0 3000.0      2.84      1.33        15
295.0 4606.0 3000.0      7.23      2.71        15
295.0 4609.0 3000.0      4.20      2.07        15
295.0 4612.0 3000.0      4.63      1.94        15
295.0 4615.0 3000.0      5.71      4.11        15
295.0 4618.0 3000.0     16.41      8.86        15
295.0 4621.0 3000.0     31.94     10.93        15
295.0 4624.0 3000.0     24.21     11.19        15
295.0 4627.0 3000.0     47.95     18.69        15
295.0 4630.0 3000.0     54.85     20.30        15
295.0 4633.0 3000.0     39.49     19.54        15
295.0 4636.0 3000.0     15.46      7.95        15
295.0 4639.0 3000.0      1.21      1.61        15
295.0 4642.0 3000.0      2.28      2.05        15
295.0 4645.0 3000.0      8.45      4.13        15
295.0 4648.0 3000.0      6.90      3.57        15
295.0 4651.0 3000.0      1.64      1.88        15
295.0 4654.0 3000.0      4.17      2.48        15
298.0 4576.0 3000.0      0.00      0.00        15
298.0 4579.0 3000.0      0.00      0.00        15
298.0 4582.0 3000.0      0.00      0.00        15
298.0 4585.0 3000.0      0.00      0.00        15
298.0 4588.0 3000.0      0.00      0.00        15
298.0 4591.0 3000.0      1.10      0.39        15
298.0 4594.0 3000.0      0.61      0.29        15
298.0 4597.0 3000.0      1.08      0.55        15
298.0 4600.0 3000.0      0.28      0.10        15
298.0 4603.0 3000.0      0.00      0.00        15
298.0 4606.0 3000.0      1.27      0.35        15
298.0 4609.0 3000.0      3.21      0.83        15
298.0 4612.0 3000.0      0.28      0.17        15
298.0 4615.0 3000.0      2.03      1.66        15
298.0 4618.0 3000.0     11.80      8.00        15
298.0 4621.0 3000.0     14.56      9.15        15
298.0 4624.0 3000.0     43.50     13.21        15
298.0 4627.0 3000.0     59.31     22.57        15
298.0 4630.0 3000.0     66.96     24.02        15
298.0 4633.0 3000.0     70.36     24.76        15
298.0 4636.0 3000.0     46.06     17.86        15
298.0 4639.0 3000.0     30.24      8.89        15
298.0 4642.0 3000.0     13.87      4.69        15
298.0 4645.0 3000.0      4.94      3.06        15
298.0 4648.0 3000.0      1.47      1.42        15
298.0 4651.0 3000.0      0.92      1.23        15
298.0 4654.0 3000.0      0.95      1.23        15
301.0 4576.0 3000.0      0.00      0.00        15
301.0 4579.0 3000.0      0.00      0.00        15
301.0 4582.0 3000.0      0.00      0.00        15
301.0 4585.0 3000.0      0.00      0.00        15
301.0 4588.0 3000.0      0.00      0.00        15
301.0 4591.0 3000.0      9.31      1.61        15
301.0 4594.0 3000.0      7.90      1.27        15
301.0 4597.0 3000.0      4.55      1.79        15
301.0 4600.0 3000.0      0.53      0.24        15
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CDC • CONTROL DATA   MANCHESTER CT

```
301.0 4603.0 3000.0      0.33      0.16      15
301.0 4606.0 3000.0      0.03      0.01      15
301.0 4609.0 3000.0      0.00      0.00      15
301.0 4612.0 3000.0      0.02      0.01      15
301.0 4615.0 3000.0      2.10      2.17      15
301.0 4618.0 3000.0      4.69      5.12      15
301.0 4621.0 3000.0      5.03      2.19      15
301.0 4624.0 3000.0     17.19      4.63      15
301.0 4627.0 3000.0     29.15      6.68      15
301.0 4630.0 3000.0     26.30     10.02      15
301.0 4633.0 3000.0     51.05     18.16      15
301.0 4636.0 3000.0     62.36     19.89      15
301.0 4639.0 3000.0     58.96     16.61      15
301.0 4642.0 3000.0      7.52      2.96      15
301.0 4645.0 3000.0      4.06      1.72      15
301.0 4648.0 3000.0      1.56      1.18      15
301.0 4651.0 3000.0      0.50      0.79      15
301.0 4654.0 3000.0      0.43      0.77      15
304.0 4576.0 3000.0      0.00      0.00      15
304.0 4579.0 3000.0      0.00      0.00      15
304.0 4582.0 3000.0      0.00      0.00      15
304.0 4585.0 3000.0      0.00      0.00      15
304.0 4588.0 3000.0      0.00      0.00      15
304.0 4591.0 3000.0      1.75      1.81      15
304.0 4594.0 3000.0      8.32      2.64      15
304.0 4597.0 3000.0      8.54      1.93      15
304.0 4600.0 3000.0      8.00      0.73      15
304.0 4603.0 3000.0      5.79      0.53      15
304.0 4606.0 3000.0      1.11      0.24      15
304.0 4609.0 3000.0      0.09      0.02      15
304.0 4612.0 3000.0      2.92      0.29      15
304.0 4615.0 3000.0      4.28      0.44      15
304.0 4618.0 3000.0      3.68      0.36      15
304.0 4621.0 3000.0      6.72      1.64      15
304.0 4624.0 3000.0     12.35      6.46      15
304.0 4627.0 3000.0      8.73      5.37      15
304.0 4630.0 3000.0     21.61      6.59      15
304.0 4633.0 3000.0     23.25      7.96      15
304.0 4636.0 3000.0     18.72      8.48      15
304.0 4639.0 3000.0     17.67      6.96      15
304.0 4642.0 3000.0      2.64      1.99      15
304.0 4645.0 3000.0      1.89      1.48      15
304.0 4648.0 3000.0     10.25      3.40      15
304.0 4651.0 3000.0     10.96      3.62      15
304.0 4654.0 3000.0      1.55      1.12      15
307.0 4576.0 3000.0      0.00      0.00      15
307.0 4579.0 3000.0      0.00      0.00      15
307.0 4582.0 3000.0      0.00      0.00      15
307.0 4585.0 3000.0      0.00      0.00      15
307.0 4588.0 3000.0      0.00      0.00      15
307.0 4591.0 3000.0      5.05      1.72      15
307.0 4594.0 3000.0     10.40      4.11      15
307.0 4597.0 3000.0     12.14      6.06      15
307.0 4600.0 3000.0      4.22      2.19      15
307.0 4603.0 3000.0     13.47      2.82      15
307.0 4606.0 3000.0      8.74      0.88      15
307.0 4609.0 3000.0      7.12      0.66      15
307.0 4612.0 3000.0      0.19      0.09      15
307.0 4615.0 3000.0      1.49      0.51      15
307.0 4618.0 3000.0      1.49      0.58      15
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CDC • CONTROL DATA MANCHESTER CT

```
307.0 4621.0 3000.0    7.99    3.52    15
307.0 4624.0 3000.0    2.32    1.19    15
307.0 4627.0 3000.0    3.97    1.84    15
307.0 4630.0 3000.0    0.92    1.32    15
307.0 4633.0 3000.0    1.23    1.30    15
307.0 4636.0 3000.0    0.76    1.08    15
307.0 4639.0 3000.0    3.14    1.93    15
307.0 4642.0 3000.0    6.27    2.73    15
307.0 4645.0 3000.0   11.72    3.46    15
307.0 4648.0 3000.0   10.06    3.07    15
307.0 4651.0 3000.0    9.79    3.07    15
307.0 4654.0 3000.0    1.95    1.69    15
310.0 4576.0 3000.0    0.00    0.00    15
310.0 4579.0 3000.0    0.00    0.00    15
310.0 4582.0 3000.0    0.00    0.00    15
310.0 4585.0 3000.0    0.00    0.00    15
310.0 4588.0 3000.0    0.00    0.00    15
310.0 4591.0 3000.0    0.31    0.07    15
310.0 4594.0 3000.0    1.47    0.59    15
310.0 4597.0 3000.0    1.46    0.69    15
310.0 4600.0 3000.0    0.90    1.23    15
310.0 4603.0 3000.0    3.84    2.21    15
310.0 4606.0 3000.0    3.32    3.29    15
310.0 4609.0 3000.0   19.89    6.30    15
310.0 4612.0 3000.0    3.90    1.99    15
310.0 4615.0 3000.0   22.01    6.57    15
310.0 4618.0 3000.0    7.81    4.19    15
310.0 4621.0 3000.0   14.02    4.73    15
310.0 4624.0 3000.0    2.47    1.31    15
310.0 4627.0 3000.0    0.16    0.44    15
310.0 4630.0 3000.0    0.44    0.46    15
310.0 4633.0 3000.0    0.38    0.45    15
310.0 4636.0 3000.0    0.30    0.43    15
310.0 4639.0 3000.0    0.40    0.46    15
310.0 4642.0 3000.0    5.96    2.59    15
310.0 4645.0 3000.0   24.34    5.95    15
310.0 4648.0 3000.0    1.34    1.44    15
310.0 4651.0 3000.0    1.25    0.76    15
310.0 4654.0 3000.0    1.01    1.87    15
313.0 4576.0 3000.0    0.00    0.00    15
313.0 4579.0 3000.0    0.00    0.00    15
313.0 4582.0 3000.0    0.00    0.00    15
313.0 4585.0 3000.0    0.00    0.00    15
313.0 4588.0 3000.0    0.00    0.00    15
313.0 4591.0 3000.0    0.00    0.00    15
313.0 4594.0 3000.0    0.01    0.00    15
313.0 4597.0 3000.0    0.36    0.15    15
313.0 4600.0 3000.0    0.45    0.19    15
313.0 4603.0 3000.0    0.41    0.18    15
313.0 4606.0 3000.0    0.48    0.16    15
313.0 4609.0 3000.0    7.49    3.81    15
313.0 4612.0 3000.0    3.42    1.04    15
313.0 4615.0 3000.0    1.87    0.22    15
313.0 4618.0 3000.0    1.15    0.56    15
313.0 4621.0 3000.0    1.50    1.12    15
313.0 4624.0 3000.0    3.14    1.51    15
313.0 4627.0 3000.0    0.61    0.61    15
313.0 4630.0 3000.0    0.81    0.56    15
313.0 4633.0 3000.0    2.39    0.83    15
313.0 4636.0 3000.0    0.65    0.52    15
```

CDC • CONTROL DATA   MANCHESTER CT

```
313.0 4639.0 3000.0    0.90    0.58    15
313.0 4642.0 3000.0    1.74    1.60    15
313.0 4645.0 3000.0    2.15    1.32    15
313.0 4648.0 3000.0    0.72    0.48    15
313.0 4651.0 3000.0    0.87    0.49    15
313.0 4654.0 3000.0    3.98    1.22    15
316.0 4576.0 3000.0    0.00    0.00    15
316.0 4579.0 3000.0    0.00    0.00    15
316.0 4582.0 3000.0    0.00    0.00    15
316.0 4585.0 3000.0    0.00    0.00    15
316.0 4588.0 3000.0    0.00    0.00    15
316.0 4591.0 3000.0    0.54    0.24    15
316.0 4594.0 3000.0    0.68    0.31    15
316.0 4597.0 3000.0    0.45    0.27    15
316.0 4600.0 3000.0    0.26    0.23    15
316.0 4603.0 3000.0    0.80    0.58    15
316.0 4606.0 3000.0    1.16    0.77    15
316.0 4609.0 3000.0    0.86    0.60    15
316.0 4612.0 3000.0    4.35    4.32    15
316.0 4615.0 3000.0   39.94    7.72    15
316.0 4618.0 3000.0   29.35    5.68    15
316.0 4621.0 3000.0    9.65    3.53    15
316.0 4624.0 3000.0    1.74    1.27    15
316.0 4627.0 3000.0    1.50    0.94    15
316.0 4630.0 3000.0    0.25    0.39    15
316.0 4633.0 3000.0    0.68    0.50    15
316.0 4636.0 3000.0    0.71    0.49    15
316.0 4639.0 3000.0    0.83    0.77    15
316.0 4642.0 3000.0    0.50    0.53    15
316.0 4645.0 3000.0    5.87    1.45    15
316.0 4648.0 3000.0    2.83    0.96    15
316.0 4651.0 3000.0    2.94    0.94    15
316.0 4654.0 3000.0   17.36    3.60    15
319.0 4576.0 3000.0    0.00    0.00    15
319.0 4579.0 3000.0    0.00    0.00    15
319.0 4582.0 3000.0    0.00    0.00    15
319.0 4585.0 3000.0    0.00    0.00    15
319.0 4588.0 3000.0    0.00    0.00    15
319.0 4591.0 3000.0    0.17    0.05    15
319.0 4594.0 3000.0    0.46    0.23    15
319.0 4597.0 3000.0    0.21    0.19    15
319.0 4600.0 3000.0    0.15    0.18    15
319.0 4603.0 3000.0    0.50    0.50    15
319.0 4606.0 3000.0    0.57    0.60    15
319.0 4609.0 3000.0    1.63    0.88    15
319.0 4612.0 3000.0    2.06    2.08    15
319.0 4615.0 3000.0   44.09   11.92    15
319.0 4618.0 3000.0   63.71   12.93    15
319.0 4621.0 3000.0   20.64    6.32    15
319.0 4624.0 3000.0    4.08    2.38    15
319.0 4627.0 3000.0    0.81    1.18    15
319.0 4630.0 3000.0    1.71    0.60    15
319.0 4633.0 3000.0    0.60    0.44    15
319.0 4636.0 3000.0    1.74    0.65    15
319.0 4639.0 3000.0    0.89    1.04    15
319.0 4642.0 3000.0    1.31    0.98    15
319.0 4645.0 3000.0    2.36    0.78    15
319.0 4648.0 3000.0    1.35    0.64    15
319.0 4651.0 3000.0    0.77    0.51    15
319.0 4654.0 3000.0    0.76    0.48    15
```

CDC • CONTROL DATA   MANCHESTER CT

c. 1985

```
262.0 4576.0 3000.0    2.15     0.79     15
262.0 4579.0 3000.0    5.64     1.65     15
262.0 4582.0 3000.0   20.35     6.21     15
262.0 4585.0 3000.0    4.73     1.94     15
262.0 4588.0 3000.0    0.37     0.77     15
262.0 4591.0 3000.0    0.90     1.32     15
262.0 4594.0 3000.0    0.32     0.88     15
262.0 4597.0 3000.0    0.10     0.12     15
262.0 4600.0 3000.0    0.11     0.12     15
262.0 4603.0 3000.0    0.02     0.06     15
262.0 4606.0 3000.0    0.03     0.07     15
262.0 4609.0 3000.0    0.04     0.11     15
262.0 4612.0 3000.0    0.09     0.12     15
262.0 4615.0 3000.0    0.11     0.13     15
262.0 4618.0 3000.0    0.20     0.15     15
262.0 4621.0 3000.0    0.17     0.12     15
262.0 4624.0 3000.0    0.19     0.10     15
262.0 4627.0 3000.0    0.17     0.09     15
262.0 4630.0 3000.0    1.95     0.79     15
262.0 4633.0 3000.0    0.20     0.10     15
262.0 4636.0 3000.0    0.26     0.43     15
262.0 4639.0 3000.0    3.56     0.68     15
262.0 4642.0 3000.0    2.19     0.81     15
262.0 4645.0 3000.0    0.11     0.08     15
262.0 4648.0 3000.0    0.22     0.11     15
262.0 4651.0 3000.0    0.02     0.06     15
262.0 4654.0 3000.0    0.21     0.11     15
265.0 4576.0 3000.0    0.45     0.21     15
265.0 4579.0 3000.0    3.32     2.20     15
265.0 4582.0 3000.0    1.64     0.72     15
265.0 4585.0 3000.0    3.63     1.77     15
265.0 4588.0 3000.0    2.69     1.28     15
265.0 4591.0 3000.0    0.90     1.32     15
265.0 4594.0 3000.0    0.38     0.90     15
265.0 4597.0 3000.0    0.10     0.12     15
265.0 4600.0 3000.0    0.11     0.12     15
265.0 4603.0 3000.0    0.02     0.06     15
265.0 4606.0 3000.0    0.03     0.07     15
265.0 4609.0 3000.0    0.04     0.11     15
265.0 4612.0 3000.0    0.09     0.12     15
265.0 4615.0 3000.0    0.11     0.13     15
265.0 4618.0 3000.0    0.20     0.15     15
265.0 4621.0 3000.0    0.17     0.12     15
265.0 4624.0 3000.0    0.19     0.10     15
265.0 4627.0 3000.0    0.17     0.09     15
265.0 4630.0 3000.0    1.95     0.79     15
265.0 4633.0 3000.0    0.20     0.10     15
265.0 4636.0 3000.0    0.26     0.43     15
265.0 4639.0 3000.0    3.56     0.68     15
265.0 4642.0 3000.0    2.19     0.81     15
265.0 4645.0 3000.0    0.11     0.08     15
265.0 4648.0 3000.0    0.22     0.11     15
265.0 4651.0 3000.0    0.02     0.06     15
265.0 4654.0 3000.0    0.21     0.11     15
268.0 4576.0 3000.0    0.77     0.24     15
268.0 4579.0 3000.0    2.43     2.07     15
268.0 4582.0 3000.0    0.50     0.52     15
268.0 4585.0 3000.0    6.76     1.66     15
268.0 4588.0 3000.0    0.29     0.35     15
268.0 4591.0 3000.0    0.74     0.98     15
```

CDC • CONTROL DATA   MANCHESTER CT

```
268.0 4594.0 3000.0    0.53    0.94    15
268.0 4597.0 3000.0    1.08    0.30    15
268.0 4600.0 3000.0    1.11    0.31    15
268.0 4603.0 3000.0    0.02    0.06    15
268.0 4606.0 3000.0    0.06    0.08    15
268.0 4609.0 3000.0    0.05    0.11    15
268.0 4612.0 3000.0    0.09    0.12    15
268.0 4615.0 3000.0    0.11    0.13    15
268.0 4618.0 3000.0    0.20    0.15    15
268.0 4621.0 3000.0    0.17    0.12    15
268.0 4624.0 3000.0    0.19    0.10    15
268.0 4627.0 3000.0    0.17    0.09    15
268.0 4630.0 3000.0    1.95    0.79    15
268.0 4633.0 3000.0    0.20    0.10    15
268.0 4636.0 3000.0    0.26    0.43    15
268.0 4639.0 3000.0    3.56    0.68    15
268.0 4642.0 3000.0    2.19    0.81    15
268.0 4645.0 3000.0    0.11    0.08    15
268.0 4648.0 3000.0    0.22    0.11    15
268.0 4651.0 3000.0    0.02    0.06    15
268.0 4654.0 3000.0    0.21    0.11    15
271.0 4576.0 3000.0    0.03    0.01    15
271.0 4579.0 3000.0    0.77    0.57    15
271.0 4582.0 3000.0    0.19    0.25    15
271.0 4585.0 3000.0    0.16    0.20    15
271.0 4588.0 3000.0    0.35    0.37    15
271.0 4591.0 3000.0    1.40    0.37    15
271.0 4594.0 3000.0    0.66    1.32    15
271.0 4597.0 3000.0    2.02    1.01    15
271.0 4600.0 3000.0    0.33    0.17    15
271.0 4603.0 3000.0    0.12    0.09    15
271.0 4606.0 3000.0    0.12    0.10    15
271.0 4609.0 3000.0    0.05    0.11    15
271.0 4612.0 3000.0    0.05    0.11    15
271.0 4615.0 3000.0    0.11    0.13    15
271.0 4618.0 3000.0    0.25    0.17    15
271.0 4621.0 3000.0    0.17    0.12    15
271.0 4624.0 3000.0    0.06    0.06    15
271.0 4627.0 3000.0    1.94    0.41    15
271.0 4630.0 3000.0    0.35    0.42    15
271.0 4633.0 3000.0    0.31    0.34    15
271.0 4636.0 3000.0    2.16    0.79    15
271.0 4639.0 3000.0    0.11    0.08    15
271.0 4642.0 3000.0    0.43    0.51    15
271.0 4645.0 3000.0    0.08    0.07    15
271.0 4648.0 3000.0    1.40    0.51    15
271.0 4651.0 3000.0    0.43    0.15    15
271.0 4654.0 3000.0    0.40    0.17    15
274.0 4576.0 3000.0    0.00    0.00    15
274.0 4579.0 3000.0    0.13    0.04    15
274.0 4582.0 3000.0    1.07    0.69    15
274.0 4585.0 3000.0    0.05    0.05    15
274.0 4588.0 3000.0    3.47    0.72    15
274.0 4591.0 3000.0    0.47    0.38    15
274.0 4594.0 3000.0    0.07    0.12    15
274.0 4597.0 3000.0    1.46    2.09    15
274.0 4600.0 3000.0    0.74    1.53    15
274.0 4603.0 3000.0    0.33    0.15    15
274.0 4606.0 3000.0    0.09    0.09    15
274.0 4609.0 3000.0    0.09    0.15    15
```

CDC • CONTROL DATA   MANCHESTER CT

```
274.0 4612.0 3000.0     0.28     0.28     15
274.0 4615.0 3000.0     0.27     0.17     15
274.0 4618.0 3000.0     0.67     0.36     15
274.0 4621.0 3000.0     0.09     0.20     15
274.0 4624.0 3000.0     0.09     0.22     15
274.0 4627.0 3000.0     0.18     0.27     15
274.0 4630.0 3000.0     0.11     0.08     15
274.0 4633.0 3000.0     0.62     0.65     15
274.0 4636.0 3000.0     0.30     0.33     15
274.0 4639.0 3000.0     0.16     0.10     15
274.0 4642.0 3000.0     0.84     0.64     15
274.0 4645.0 3000.0     1.81     0.55     15
274.0 4648.0 3000.0     6.06     1.60     15
274.0 4651.0 3000.0     0.19     0.11     15
274.0 4654.0 3000.0     0.77     0.28     15
277.0 4576.0 3000.0     0.00     0.00     15
277.0 4579.0 3000.0     0.02     0.01     15
277.0 4582.0 3000.0     0.91     0.36     15
277.0 4585.0 3000.0     0.42     0.72     15
277.0 4588.0 3000.0     0.50     0.45     15
277.0 4591.0 3000.0     1.61     0.92     15
277.0 4594.0 3000.0     0.17     0.26     15
277.0 4597.0 3000.0     0.56     0.51     15
277.0 4600.0 3000.0     0.10     0.13     15
277.0 4603.0 3000.0     0.97     2.33     15
277.0 4606.0 3000.0     1.29     2.03     15
277.0 4609.0 3000.0     0.87     1.16     15
277.0 4612.0 3000.0     0.07     0.12     15
277.0 4615.0 3000.0     0.46     0.22     15
277.0 4618.0 3000.0     0.42     0.47     15
277.0 4621.0 3000.0     0.52     0.22     15
277.0 4624.0 3000.0     0.11     0.09     15
277.0 4627.0 3000.0     1.03     0.40     15
277.0 4630.0 3000.0     0.22     0.13     15
277.0 4633.0 3000.0     0.99     1.40     15
277.0 4636.0 3000.0     0.21     0.19     15
277.0 4639.0 3000.0     0.75     0.37     15
277.0 4642.0 3000.0     1.40     1.38     15
277.0 4645.0 3000.0     0.80     0.92     15
277.0 4648.0 3000.0     4.64     1.41     15
277.0 4651.0 3000.0     0.38     0.16     15
277.0 4654.0 3000.0     0.02     0.06     15
280.0 4576.0 3000.0     0.00     0.00     15
280.0 4579.0 3000.0     0.01     0.00     15
280.0 4582.0 3000.0     0.77     0.34     15
280.0 4585.0 3000.0     0.56     0.73     15
280.0 4588.0 3000.0     0.13     0.10     15
280.0 4591.0 3000.0     2.01     0.55     15
280.0 4594.0 3000.0     0.32     0.53     15
280.0 4597.0 3000.0     0.29     0.34     15
280.0 4600.0 3000.0     0.15     0.12     15
280.0 4603.0 3000.0     0.16     0.11     15
280.0 4606.0 3000.0     0.16     0.23     15
280.0 4609.0 3000.0     0.70     1.39     15
280.0 4612.0 3000.0     0.39     1.73     15
280.0 4615.0 3000.0     1.27     0.46     15
280.0 4618.0 3000.0     2.87     1.16     15
280.0 4621.0 3000.0     0.35     0.18     15
280.0 4624.0 3000.0     0.21     0.12     15
280.0 4627.0 3000.0     1.08     0.24     15
```

```
280.0 4630.0 3000.0    0.70    0.27    15
280.0 4633.0 3000.0    2.14    1.62    15
280.0 4636.0 3000.0    1.07    0.26    15
280.0 4639.0 3000.0    1.25    0.53    15
280.0 4642.0 3000.0    0.53    0.43    15
280.0 4645.0 3000.0    3.71    1.12    15
280.0 4648.0 3000.0    2.10    1.37    15
280.0 4651.0 3000.0    1.42    0.36    15
280.0 4654.0 3000.0    0.02    0.06    15
283.0 4576.0 3000.0    0.00    0.00    15
283.0 4579.0 3000.0    0.00    0.00    15
283.0 4582.0 3000.0    0.18    0.13    15
283.0 4585.0 3000.0    0.54    0.88    15
283.0 4588.0 3000.0    0.18    0.19    15
283.0 4591.0 3000.0    0.06    0.16    15
283.0 4594.0 3000.0    0.40    0.52    15
283.0 4597.0 3000.0    0.28    0.33    15
283.0 4600.0 3000.0    0.13    0.09    15
283.0 4603.0 3000.0    0.11    0.09    15
283.0 4606.0 3000.0    0.17    0.21    15
283.0 4609.0 3000.0    0.05    0.11    15
283.0 4612.0 3000.0    1.62    1.94    15
283.0 4615.0 3000.0    3.88    2.21    15
283.0 4618.0 3000.0    9.56    2.29    15
283.0 4621.0 3000.0    0.72    0.27    15
283.0 4624.0 3000.0    0.50    0.16    15
283.0 4627.0 3000.0    0.28    0.16    15
283.0 4630.0 3000.0    0.15    0.23    15
283.0 4633.0 3000.0    2.96    1.88    15
283.0 4636.0 3000.0    1.66    0.49    15
283.0 4639.0 3000.0    0.72    0.60    15
283.0 4642.0 3000.0    0.09    0.09    15
283.0 4645.0 3000.0    0.13    0.11    15
283.0 4648.0 3000.0    0.79    0.84    15
283.0 4651.0 3000.0    0.86    0.71    15
283.0 4654.0 3000.0    1.06    0.77    15
286.0 4576.0 3000.0    0.00    0.00    15
286.0 4579.0 3000.0    0.00    0.00    15
286.0 4582.0 3000.0    0.93    0.35    15
286.0 4585.0 3000.0    1.00    1.03    15
286.0 4588.0 3000.0    1.38    0.62    15
286.0 4591.0 3000.0    0.25    0.21    15
286.0 4594.0 3000.0    2.74    1.14    15
286.0 4597.0 3000.0    0.75    0.33    15
286.0 4600.0 3000.0    0.86    0.34    15
286.0 4603.0 3000.0    0.79    0.34    15
286.0 4606.0 3000.0    0.18    0.15    15
286.0 4609.0 3000.0    0.20    0.27    15
286.0 4612.0 3000.0    2.32    2.37    15
286.0 4615.0 3000.0   10.43    4.81    15
286.0 4618.0 3000.0   18.48    6.21    15
286.0 4621.0 3000.0    9.75    2.42    15
286.0 4624.0 3000.0    0.97    0.76    15
286.0 4627.0 3000.0    2.80    1.19    15
286.0 4630.0 3000.0    3.87    0.93    15
286.0 4633.0 3000.0    1.71    1.43    15
286.0 4636.0 3000.0    4.64    2.15    15
286.0 4639.0 3000.0    2.72    1.40    15
286.0 4642.0 3000.0    0.74    0.60    15
286.0 4645.0 3000.0    0.72    1.03    15
```

CDC • CONTROL DATA   MANCHESTER, CT

```
 286.0 4648.0 3000.0     3.41     1.30     15
 286.0 4651.0 3000.0    15.17     4.52     15
 286.0 4654.0 3000.0    10.88     3.66     15
 289.0 4576.0 3000.0     0.00     0.00     15
 289.0 4579.0 3000.0     0.00     0.00     15
 289.0 4582.0 3000.0     2.52     1.48     15
 289.0 4585.0 3000.0     1.45     0.56     15
 289.0 4588.0 3000.0     4.94     2.33     15
 289.0 4591.0 3000.0     7.55     2.42     15
 289.0 4594.0 3000.0     3.18     1.35     15
 289.0 4597.0 3000.0     0.21     0.22     15
 289.0 4600.0 3000.0     0.36     0.33     15
 289.0 4603.0 3000.0     0.59     0.52     15
 289.0 4606.0 3000.0     0.96     1.35     15
 289.0 4609.0 3000.0     3.67     1.09     15
 289.0 4612.0 3000.0     2.96     1.01     15
 289.0 4615.0 3000.0    15.60     6.43     15
 289.0 4618.0 3000.0    28.35     9.95     15
 289.0 4621.0 3000.0    11.00     4.18     15
 289.0 4624.0 3000.0     1.02     1.01     15
 289.0 4627.0 3000.0     1.32     1.52     15
 289.0 4630.0 3000.0     2.48     1.68     15
 289.0 4633.0 3000.0     5.37     2.18     15
 289.0 4636.0 3000.0     4.17     2.71     15
 289.0 4639.0 3000.0     3.29     1.81     15
 289.0 4642.0 3000.0     6.55     2.30     15
 289.0 4645.0 3000.0     0.48     0.66     15
 289.0 4648.0 3000.0     1.98     2.06     15
 289.0 4651.0 3000.0    29.28     9.21     15
 289.0 4654.0 3000.0     2.32     2.93     15
 292.0 4576.0 3000.0     0.00     0.00     15
 292.0 4579.0 3000.0     0.09     0.02     15
 292.0 4582.0 3000.0     1.30     1.06     15
 292.0 4585.0 3000.0     4.41     2.49     15
 292.0 4588.0 3000.0     4.31     3.99     15
 292.0 4591.0 3000.0     1.73     2.71     15
 292.0 4594.0 3000.0     2.63     3.14     15
 292.0 4597.0 3000.0     0.69     1.70     15
 292.0 4600.0 3000.0     3.81     3.11     15
 292.0 4603.0 3000.0     8.48     4.84     15
 292.0 4606.0 3000.0     2.75     1.91     15
 292.0 4609.0 3000.0    21.38     7.92     15
 292.0 4612.0 3000.0     6.64     4.99     15
 292.0 4615.0 3000.0     3.39     6.09     15
 292.0 4618.0 3000.0     7.19     6.59     15
 292.0 4621.0 3000.0    16.84     8.49     15
 292.0 4624.0 3000.0     7.60     5.21     15
 292.0 4627.0 3000.0    15.41     6.06     15
 292.0 4630.0 3000.0     7.80     4.44     15
 292.0 4633.0 3000.0    15.16     6.09     15
 292.0 4636.0 3000.0    21.08     6.70     15
 292.0 4639.0 3000.0     3.49     1.76     15
 292.0 4642.0 3000.0    16.30     3.92     15
 292.0 4645.0 3000.0     3.91     2.04     15
 292.0 4648.0 3000.0     3.67     3.01     15
 292.0 4651.0 3000.0    32.86    11.02     15
 292.0 4654.0 3000.0    22.30     8.44     15
 295.0 4576.0 3000.0     0.00     0.00     15
 295.0 4579.0 3000.0     0.00     0.00     15
 295.0 4582.0 3000.0     0.00     0.00     15
```

CDC • CONTROL DATA MANCHESTER CT

```
295.0 4585.0 3000.0    0.00    0.00    15
295.0 4588.0 3000.0    0.08    0.02    15
295.0 4591.0 3000.0    0.95    0.66    15
295.0 4594.0 3000.0    3.13    1.31    15
295.0 4597.0 3000.0    5.71    1.93    15
295.0 4600.0 3000.0    3.56    2.16    15
295.0 4603.0 3000.0    3.61    1.58    15
295.0 4606.0 3000.0    9.20    3.23    15
295.0 4609.0 3000.0    5.30    2.41    15
295.0 4612.0 3000.0    4.94    2.07    15
295.0 4615.0 3000.0    5.92    4.34    15
295.0 4618.0 3000.0   17.01    9.32    15
295.0 4621.0 3000.0   32.84   11.39    15
295.0 4624.0 3000.0   25.43   11.91    15
295.0 4627.0 3000.0   50.49   19.92    15
295.0 4630.0 3000.0   55.82   21.07    15
295.0 4633.0 3000.0   40.33   20.38    15
295.0 4636.0 3000.0   15.72    8.29    15
295.0 4639.0 3000.0    1.34    1.74    15
295.0 4642.0 3000.0    2.46    2.20    15
295.0 4645.0 3000.0    8.87    4.39    15
295.0 4648.0 3000.0    7.47    3.86    15
295.0 4651.0 3000.0    1.80    2.02    15
295.0 4654.0 3000.0    4.68    2.70    15
298.0 4576.0 3000.0    0.00    0.00    15
298.0 4579.0 3000.0    0.00    0.00    15
298.0 4582.0 3000.0    0.00    0.00    15
298.0 4585.0 3000.0    0.00    0.00    15
298.0 4588.0 3000.0    0.00    0.00    15
298.0 4591.0 3000.0    1.13    0.41    15
298.0 4594.0 3000.0    0.71    0.32    15
298.0 4597.0 3000.0    1.36    0.64    15
298.0 4600.0 3000.0    0.36    0.12    15
298.0 4603.0 3000.0    0.00    0.00    15
298.0 4606.0 3000.0    1.63    0.43    15
298.0 4609.0 3000.0    4.12    1.04    15
298.0 4612.0 3000.0    0.31    0.19    15
298.0 4615.0 3000.0    2.11    1.75    15
298.0 4618.0 3000.0   12.23    8.43    15
298.0 4621.0 3000.0   15.07    9.59    15
298.0 4624.0 3000.0   44.78   13.80    15
298.0 4627.0 3000.0   60.24   23.46    15
298.0 4630.0 3000.0   68.24   24.97    15
298.0 4633.0 3000.0   71.41   25.68    15
298.0 4636.0 3000.0   46.19   18.36    15
298.0 4639.0 3000.0   32.28    9.65    15
298.0 4642.0 3000.0   14.60    5.01    15
298.0 4645.0 3000.0    5.26    3.27    15
298.0 4648.0 3000.0    1.66    1.54    15
298.0 4651.0 3000.0    1.00    1.32    15
298.0 4654.0 3000.0    1.02    1.32    15
301.0 4576.0 3000.0    0.00    0.00    15
301.0 4579.0 3000.0    0.00    0.00    15
301.0 4582.0 3000.0    0.00    0.00    15
301.0 4585.0 3000.0    0.00    0.00    15
301.0 4588.0 3000.0    0.00    0.00    15
301.0 4591.0 3000.0    9.35    1.67    15
301.0 4594.0 3000.0    7.98    1.31    15
301.0 4597.0 3000.0    4.60    1.89    15
301.0 4600.0 3000.0    0.57    0.25    15
```

CDC • CONTROL DATA   MANCHESTER CT

```
301.0 4603.0 3000.0      0.36      0.17        15
301.0 4606.0 3000.0      0.04      0.01        15
301.0 4609.0 3000.0      0.00      0.00        15
301.0 4612.0 3000.0      0.02      0.01        15
301.0 4615.0 3000.0      2.20      2.30        15
301.0 4618.0 3000.0      4.88      5.42        15
301.0 4621.0 3000.0      5.16      2.29        15
301.0 4624.0 3000.0     17.45      4.81        15
301.0 4627.0 3000.0     29.18      6.84        15
301.0 4630.0 3000.0     26.33     10.28        15
301.0 4633.0 3000.0     51.59     18.75        15
301.0 4636.0 3000.0     62.14     20.24        15
301.0 4639.0 3000.0     59.91     17.13        15
301.0 4642.0 3000.0      8.34      3.24        15
301.0 4645.0 3000.0      4.49      1.87        15
301.0 4648.0 3000.0      1.74      1.28        15
301.0 4651.0 3000.0      0.54      0.85        15
301.0 4654.0 3000.0      0.47      0.83        15
304.0 4576.0 3000.0      0.00      0.00        15
304.0 4579.0 3000.0      0.00      0.00        15
304.0 4582.0 3000.0      0.00      0.00        15
304.0 4585.0 3000.0      0.00      0.00        15
304.0 4588.0 3000.0      0.00      0.00        15
304.0 4591.0 3000.0      1.86      1.93        15
304.0 4594.0 3000.0      8.69      2.79        15
304.0 4597.0 3000.0      8.86      2.03        15
304.0 4600.0 3000.0      7.99      0.73        15
304.0 4603.0 3000.0      5.81      0.53        15
304.0 4606.0 3000.0      1.17      0.25        15
304.0 4609.0 3000.0      0.10      0.02        15
304.0 4612.0 3000.0      2.92      0.29        15
304.0 4615.0 3000.0      4.28      0.44        15
304.0 4618.0 3000.0      3.68      0.36        15
304.0 4621.0 3000.0      6.67      1.66        15
304.0 4624.0 3000.0     12.28      6.64        15
304.0 4627.0 3000.0      9.08      5.68        15
304.0 4630.0 3000.0     22.75      6.97        15
304.0 4633.0 3000.0     24.21      8.34        15
304.0 4636.0 3000.0     18.77      8.71        15
304.0 4639.0 3000.0     18.19      7.24        15
304.0 4642.0 3000.0      2.86      2.13        15
304.0 4645.0 3000.0      2.05      1.59        15
304.0 4648.0 3000.0     11.55      3.75        15
304.0 4651.0 3000.0     12.73      4.04        15
304.0 4654.0 3000.0      1.76      1.21        15
307.0 4576.0 3000.0      0.00      0.00        15
307.0 4579.0 3000.0      0.00      0.00        15
307.0 4582.0 3000.0      0.00      0.00        15
307.0 4585.0 3000.0      0.00      0.00        15
307.0 4588.0 3000.0      0.00      0.00        15
307.0 4591.0 3000.0      5.38      1.84        15
307.0 4594.0 3000.0     10.98      4.35        15
307.0 4597.0 3000.0     12.68      6.38        15
307.0 4600.0 3000.0      4.44      2.31        15
307.0 4603.0 3000.0     13.77      2.92        15
307.0 4606.0 3000.0      8.76      0.88        15
307.0 4609.0 3000.0      7.13      0.66        15
307.0 4612.0 3000.0      0.19      0.10        15
307.0 4615.0 3000.0      1.53      0.53        15
307.0 4618.0 3000.0      1.47      0.58        15
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CDC • CONTROL DATA MANCHESTER CT

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307.0 4621.0 3000.0     7.93     3.60      15
307.0 4624.0 3000.0     2.30     1.21      15
307.0 4627.0 3000.0     4.55     2.02      15
307.0 4630.0 3000.0     0.99     1.41      15
307.0 4633.0 3000.0     1.33     1.39      15
307.0 4636.0 3000.0     0.82     1.16      15
307.0 4639.0 3000.0     3.49     2.09      15
307.0 4642.0 3000.0     7.06     2.98      15
307.0 4645.0 3000.0    13.73     3.91      15
307.0 4648.0 3000.0    11.59     3.43      15
307.0 4651.0 3000.0    11.47     3.45      15
307.0 4654.0 3000.0     2.19     1.82      15
310.0 4576.0 3000.0     0.00     0.00      15
310.0 4579.0 3000.0     0.00     0.00      15
310.0 4582.0 3000.0     0.00     0.00      15
310.0 4585.0 3000.0     0.00     0.00      15
310.0 4588.0 3000.0     0.00     0.00      15
310.0 4591.0 3000.0     0.33     0.07      15
310.0 4594.0 3000.0     1.49     0.60      15
310.0 4597.0 3000.0     1.50     0.72      15
310.0 4600.0 3000.0     0.94     1.30      15
310.0 4603.0 3000.0     3.97     2.32      15
310.0 4606.0 3000.0     3.48     3.50      15
310.0 4609.0 3000.0    20.36     6.59      15
310.0 4612.0 3000.0     4.02     2.11      15
310.0 4615.0 3000.0    22.53     6.83      15
310.0 4618.0 3000.0     8.00     4.40      15
310.0 4621.0 3000.0    14.27     4.89      15
310.0 4624.0 3000.0     2.51     1.38      15
310.0 4627.0 3000.0     0.17     0.47      15
310.0 4630.0 3000.0     0.48     0.49      15
310.0 4633.0 3000.0     0.41     0.48      15
310.0 4636.0 3000.0     0.33     0.46      15
310.0 4639.0 3000.0     0.43     0.49      15
310.0 4642.0 3000.0     6.81     2.84      15
310.0 4645.0 3000.0    28.44     6.79      15
310.0 4648.0 3000.0     1.45     1.54      15
310.0 4651.0 3000.0     1.36     0.82      15
310.0 4654.0 3000.0     1.08     2.00      15
313.0 4576.0 3000.0     0.00     0.00      15
313.0 4579.0 3000.0     0.00     0.00      15
313.0 4582.0 3000.0     0.00     0.00      15
313.0 4585.0 3000.0     0.00     0.00      15
313.0 4588.0 3000.0     0.00     0.00      15
313.0 4591.0 3000.0     0.00     0.00      15
313.0 4594.0 3000.0     0.01     0.00      15
313.0 4597.0 3000.0     0.42     0.17      15
313.0 4600.0 3000.0     0.47     0.20      15
313.0 4603.0 3000.0     0.44     0.19      15
313.0 4606.0 3000.0     0.51     0.17      15
313.0 4609.0 3000.0     9.30     4.32      15
313.0 4612.0 3000.0     3.46     1.09      15
313.0 4615.0 3000.0     1.88     0.23      15
313.0 4618.0 3000.0     1.18     0.58      15
313.0 4621.0 3000.0     1.52     1.17      15
313.0 4624.0 3000.0     3.19     1.57      15
313.0 4627.0 3000.0     0.66     0.65      15
313.0 4630.0 3000.0     0.88     0.60      15
313.0 4633.0 3000.0     2.75     0.92      15
313.0 4636.0 3000.0     0.70     0.55      15
```

CDC • CONTROL DATA MANCHESTER CT

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313.0 4639.0 3000.0     0.98     0.62     15
313.0 4642.0 3000.0     1.88     1.71     15
313.0 4645.0 3000.0     2.33     1.42     15
313.0 4648.0 3000.0     0.78     0.52     15
313.0 4651.0 3000.0     0.94     0.53     15
313.0 4654.0 3000.0     4.89     1.35     15
316.0 4576.0 3000.0     0.00     0.00     15
316.0 4579.0 3000.0     0.00     0.00     15
316.0 4582.0 3000.0     0.00     0.00     15
316.0 4585.0 3000.0     0.00     0.00     15
316.0 4588.0 3000.0     0.00     0.00     15
316.0 4591.0 3000.0     0.59     0.26     15
316.0 4594.0 3000.0     0.79     0.34     15
316.0 4597.0 3000.0     0.53     0.30     15
316.0 4600.0 3000.0     0.28     0.24     15
316.0 4603.0 3000.0     0.85     0.61     15
316.0 4606.0 3000.0     1.23     0.82     15
316.0 4609.0 3000.0     0.92     0.64     15
316.0 4612.0 3000.0     4.57     4.58     15
316.0 4615.0 3000.0    40.33     7.84     15
316.0 4618.0 3000.0    29.65     5.77     15
316.0 4621.0 3000.0     9.78     3.63     15
316.0 4624.0 3000.0     1.77     1.34     15
316.0 4627.0 3000.0     1.71     1.02     15
316.0 4630.0 3000.0     0.27     0.41     15
316.0 4633.0 3000.0     0.74     0.53     15
316.0 4636.0 3000.0     0.77     0.53     15
316.0 4639.0 3000.0     0.90     0.82     15
316.0 4642.0 3000.0     0.55     0.57     15
316.0 4645.0 3000.0     6.78     1.65     15
316.0 4648.0 3000.0     3.16     1.06     15
316.0 4651.0 3000.0     3.35     1.04     15
316.0 4654.0 3000.0    20.27     4.15     15
319.0 4576.0 3000.0     0.00     0.00     15
319.0 4579.0 3000.0     0.00     0.00     15
319.0 [illegible] 3000.0     0.00     0.00     15
319.0 4585.0 3000.0     0.00     0.00     15
319.0 4588.0 3000.0     0.00     0.00     15
319.0 4591.0 3000.0     0.20     0.06     15
319.0 4594.0 3000.0     0.56     0.26     15
319.0 4597.0 3000.0     0.25     0.21     15
319.0 4600.0 3000.0     0.15     0.20     15
319.0 4603.0 3000.0     0.54     0.53     15
319.0 4606.0 3000.0     0.61     0.64     15
319.0 4609.0 3000.0     1.73     0.93     15
319.0 4612.0 3000.0     2.13     2.20     15
319.0 4615.0 3000.0    44.58    12.14     15
319.0 4618.0 3000.0    64.32    13.13     15
319.0 4621.0 3000.0    20.88     6.46     15
319.0 4624.0 3000.0     4.14     2.48     15
319.0 4627.0 3000.0     0.87     1.26     15
319.0 4630.0 3000.0     2.02     0.67     15
319.0 4633.0 3000.0     0.65     0.47     15
319.0 4636.0 3000.0     1.98     0.72     15
319.0 4639.0 3000.0     0.96     1.11     15
319.0 4642.0 3000.0     1.51     0.96     15
319.0 4645.0 3000.0     2.73     0.87     15
319.0 4648.0 3000.0     1.47     0.69     15
319.0 4651.0 3000.0     0.83     0.55     15
319.0 4654.0 3000.0     0.83     0.51     15
```

CDC • CONTROL DATA MANCHESTER CT

3. Future Unleaded Gas Strategy Inventories

a. 1978

```
262.0 4576.0 3000.0    1.75    0.62    15
262.0 4579.0 3000.0    5.28    1.41    15
262.0 4582.0 3000.0   18.80    5.21    15
262.0 4585.0 3000.0    4.48    1.59    15
262.0 4588.0 3000.0    0.36    0.54    15
262.0 4591.0 3000.0    0.86    0.94    15
262.0 4594.0 3000.0    0.30    0.61    15
262.0 4597.0 3000.0    0.10    0.09    15
262.0 4600.0 3000.0    0.10    0.09    15
262.0 4603.0 3000.0    0.02    0.04    15
262.0 4606.0 3000.0    0.02    0.05    15
262.0 4609.0 3000.0    0.04    0.07    15
262.0 4612.0 3000.0    0.08    0.08    15
262.0 4615.0 3000.0    0.10    0.09    15
262.0 4618.0 3000.0    0.17    0.11    15
262.0 4621.0 3000.0    0.16    0.09    15
262.0 4624.0 3000.0    0.18    0.08    15
262.0 4627.0 3000.0    0.16    0.07    15
262.0 4630.0 3000.0    1.90    0.64    15
262.0 4633.0 3000.0    0.19    0.08    15
262.0 4636.0 3000.0    0.25    0.31    15
262.0 4639.0 3000.0    3.56    0.66    15
262.0 4642.0 3000.0    2.16    0.67    15
262.0 4645.0 3000.0    0.10    0.06    15
262.0 4648.0 3000.0    0.20    0.09    15
262.0 4651.0 3000.0    0.02    0.04    15
262.0 4654.0 3000.0    0.18    0.09    15
265.0 4576.0 3000.0    0.39    0.16    15
265.0 4579.0 3000.0    2.93    1.65    15
265.0 4582.0 3000.0    1.57    0.57    15
265.0 4585.0 3000.0    3.59    1.42    15
265.0 4588.0 3000.0    2.69    1.07    15
265.0 4591.0 3000.0    0.86    0.94    15
265.0 4594.0 3000.0    0.37    0.63    15
265.0 4597.0 3000.0    0.10    0.09    15
265.0 4600.0 3000.0    0.10    0.09    15
265.0 4603.0 3000.0    0.02    0.04    15
265.0 4606.0 3000.0    0.02    0.05    15
265.0 4609.0 3000.0    0.04    0.07    15
265.0 4612.0 3000.0    0.08    0.08    15
265.0 4615.0 3000.0    0.10    0.09    15
265.0 4618.0 3000.0    0.17    0.11    15
265.0 4621.0 3000.0    0.16    0.09    15
265.0 4624.0 3000.0    0.18    0.08    15
265.0 4627.0 3000.0    0.16    0.07    15
265.0 4630.0 3000.0    1.90    0.64    15
265.0 4633.0 3000.0    0.19    0.08    15
265.0 4636.0 3000.0    0.25    0.31    15
265.0 4639.0 3000.0    3.56    0.66    15
265.0 4642.0 3000.0    2.16    0.67    15
265.0 4645.0 3000.0    0.10    0.06    15
265.0 4648.0 3000.0    0.20    0.09    15
265.0 4651.0 3000.0    0.02    0.04    15
265.0 4654.0 3000.0    0.18    0.09    15
268.0 4576.0 3000.0    0.65    0.19    15
268.0 4579.0 3000.0    2.07    1.50    15
268.0 4582.0 3000.0    0.42    0.37    15
268.0 4585.0 3000.0    6.76    1.53    15
268.0 4588.0 3000.0    0.30    0.26    15
```

268.0	4591.0	3000.0	0.71	0.71	15
268.0	4594.0	3000.0	0.52	0.68	15
268.0	4597.0	3000.0	1.09	0.27	15
268.0	4600.0	3000.0	1.09	0.27	15
268.0	4603.0	3000.0	0.02	0.04	15
268.0	4606.0	3000.0	0.05	0.06	15
268.0	4609.0	3000.0	0.05	0.08	15
268.0	4612.0	3000.0	0.08	0.08	15
268.0	4615.0	3000.0	0.10	0.09	15
268.0	4618.0	3000.0	0.17	0.11	15
268.0	4621.0	3000.0	0.16	0.09	15
268.0	4624.0	3000.0	0.18	0.08	15
268.0	4627.0	3000.0	0.16	0.07	15
268.0	4630.0	3000.0	1.90	0.64	15
268.0	4633.0	3000.0	0.19	0.08	15
268.0	4636.0	3000.0	0.25	0.31	15
268.0	4639.0	3000.0	3.56	0.66	15
268.0	4642.0	3000.0	2.16	0.67	15
268.0	4645.0	3000.0	0.10	0.06	15
268.0	4648.0	3000.0	0.20	0.09	15
268.0	4651.0	3000.0	0.02	0.04	15
268.0	4654.0	3000.0	0.18	0.09	15
271.0	4576.0	3000.0	0.03	0.01	15
271.0	4579.0	3000.0	0.68	0.42	15
271.0	4582.0	3000.0	0.17	0.18	15
271.0	4585.0	3000.0	0.15	0.14	15
271.0	4588.0	3000.0	0.33	0.28	15
271.0	4591.0	3000.0	1.37	0.33	15
271.0	4594.0	3000.0	0.62	0.93	15
271.0	4597.0	3000.0	2.01	0.83	15
271.0	4600.0	3000.0	0.32	0.14	15
271.0	4603.0	3000.0	0.11	0.07	15
271.0	4606.0	3000.0	0.10	0.07	15
271.0	4609.0	3000.0	0.04	0.08	15
271.0	4612.0	3000.0	0.04	0.08	15
271.0	4615.0	3000.0	0.10	0.09	15
271.0	4618.0	3000.0	0.22	0.13	15
271.0	4621.0	3000.0	0.16	0.09	15
271.0	4624.0	3000.0	0.05	0.05	15
271.0	4627.0	3000.0	1.92	0.39	15
271.0	4630.0	3000.0	0.33	0.30	15
271.0	4633.0	3000.0	0.29	0.25	15
271.0	4636.0	3000.0	2.13	0.66	15
271.0	4639.0	3000.0	0.10	0.06	15
271.0	4642.0	3000.0	0.40	0.37	15
271.0	4645.0	3000.0	0.07	0.05	15
271.0	4648.0	3000.0	1.34	0.42	15
271.0	4651.0	3000.0	0.40	0.12	15
271.0	4654.0	3000.0	0.35	0.14	15
274.0	4576.0	3000.0	0.00	0.00	15
274.0	4579.0	3000.0	0.11	0.03	15
274.0	4582.0	3000.0	0.98	0.52	15
274.0	4585.0	3000.0	0.04	0.04	15
274.0	4588.0	3000.0	3.11	0.62	15
274.0	4591.0	3000.0	0.43	0.29	15
274.0	4594.0	3000.0	0.06	0.09	15
274.0	4597.0	3000.0	1.35	1.49	15
274.0	4600.0	3000.0	0.68	1.08	15
274.0	4603.0	3000.0	0.29	0.12	15

274.0	4606.0	3000.0	0.08	0.07	15
274.0	4609.0	3000.0	0.08	0.11	15
274.0	4612.0	3000.0	0.25	0.21	15
274.0	4615.0	3000.0	0.24	0.13	15
274.0	4618.0	3000.0	0.60	0.28	15
274.0	4621.0	3000.0	0.08	0.14	15
274.0	4624.0	3000.0	0.09	0.16	15
274.0	4627.0	3000.0	0.17	0.19	15
274.0	4630.0	3000.0	0.10	0.06	15
274.0	4633.0	3000.0	0.58	0.48	15
274.0	4636.0	3000.0	0.29	0.24	15
274.0	4639.0	3000.0	0.15	0.08	15
274.0	4642.0	3000.0	0.77	0.49	15
274.0	4645.0	3000.0	1.70	0.48	15
274.0	4648.0	3000.0	5.84	1.42	15
274.0	4651.0	3000.0	0.17	0.08	15
274.0	4654.0	3000.0	0.69	0.23	15
277.0	4576.0	3000.0	0.00	0.00	15
277.0	4579.0	3000.0	0.02	0.01	15
277.0	4582.0	3000.0	0.62	0.29	15
277.0	4585.0	3000.0	0.38	0.51	15
277.0	4588.0	3000.0	0.45	0.33	15
277.0	4591.0	3000.0	1.54	0.71	15
277.0	4594.0	3000.0	0.15	0.19	15
277.0	4597.0	3000.0	0.52	0.38	15
277.0	4600.0	3000.0	0.09	0.09	15
277.0	4603.0	3000.0	0.91	1.62	15
277.0	4606.0	3000.0	1.16	1.43	15
277.0	4609.0	3000.0	0.81	0.83	15
277.0	4612.0	3000.0	0.06	0.08	15
277.0	4615.0	3000.0	0.41	0.17	15
277.0	4618.0	3000.0	0.37	0.34	15
277.0	4621.0	3000.0	0.47	0.18	15
277.0	4624.0	3000.0	0.11	0.07	15
277.0	4627.0	3000.0	0.98	0.34	15
277.0	4630.0	3000.0	0.21	0.10	15
277.0	4633.0	3000.0	0.93	1.00	15
277.0	4636.0	3000.0	0.20	0.14	15
277.0	4639.0	3000.0	0.70	0.30	15
277.0	4642.0	3000.0	1.31	1.02	15
277.0	4645.0	3000.0	0.74	0.67	15
277.0	4648.0	3000.0	4.39	1.21	15
277.0	4651.0	3000.0	0.34	0.13	15
277.0	4654.0	3000.0	0.02	0.04	15
280.0	4576.0	3000.0	0.00	0.00	15
280.0	4579.0	3000.0	0.01	0.00	15
280.0	4582.0	3000.0	0.68	0.28	15
280.0	4585.0	3000.0	0.51	0.52	15
280.0	4588.0	3000.0	0.12	0.07	15
280.0	4591.0	3000.0	1.94	0.48	15
280.0	4594.0	3000.0	0.30	0.38	15
280.0	4597.0	3000.0	0.24	0.24	15
280.0	4600.0	3000.0	0.13	0.09	15
280.0	4603.0	3000.0	0.13	0.08	15
280.0	4606.0	3000.0	0.14	0.17	15
280.0	4609.0	3000.0	0.64	0.97	15
280.0	4612.0	3000.0	0.81	1.21	15
280.0	4615.0	3000.0	1.11	0.39	15
280.0	4618.0	3000.0	2.63	0.95	15

280.0	4621.0	3000.0	0.31	0.15	15
280.0	4624.0	3000.0	0.19	0.10	15
280.0	4627.0	3000.0	1.07	0.23	15
280.0	4630.0	3000.0	0.65	0.23	15
280.0	4633.0	3000.0	2.07	1.22	15
280.0	4636.0	3000.0	1.05	0.24	15
280.0	4639.0	3000.0	1.22	0.43	15
280.0	4642.0	3000.0	0.49	0.32	15
280.0	4645.0	3000.0	3.59	0.97	15
280.0	4648.0	3000.0	1.98	1.04	15
280.0	4651.0	3000.0	1.36	0.32	15
280.0	4654.0	3000.0	0.02	0.04	15
283.0	4576.0	3000.0	0.00	0.00	15
283.0	4579.0	3000.0	0.00	0.00	15
283.0	4582.0	3000.0	0.16	0.10	15
283.0	4585.0	3000.0	0.50	0.62	15
283.0	4588.0	3000.0	0.16	0.14	15
283.0	4591.0	3000.0	0.05	0.11	15
283.0	4594.0	3000.0	0.37	0.37	15
283.0	4597.0	3000.0	0.24	0.23	15
283.0	4600.0	3000.0	0.10	0.07	15
283.0	4603.0	3000.0	0.09	0.06	15
283.0	4606.0	3000.0	0.14	0.15	15
283.0	4609.0	3000.0	0.05	0.08	15
283.0	4612.0	3000.0	1.44	1.39	15
283.0	4615.0	3000.0	3.56	1.70	15
283.0	4618.0	3000.0	9.29	2.07	15
283.0	4621.0	3000.0	0.66	0.23	15
283.0	4624.0	3000.0	0.48	0.14	15
283.0	4627.0	3000.0	0.27	0.13	15
283.0	4630.0	3000.0	0.14	0.16	15
283.0	4633.0	3000.0	2.69	1.45	15
283.0	4636.0	3000.0	1.61	0.43	15
283.0	4639.0	3000.0	0.65	0.45	15
283.0	4642.0	3000.0	0.08	0.07	15
283.0	4645.0	3000.0	0.12	0.08	15
283.0	4648.0	3000.0	0.74	0.62	15
283.0	4651.0	3000.0	0.82	0.54	15
283.0	4654.0	3000.0	0.97	0.60	15
286.0	4576.0	3000.0	0.00	0.00	15
286.0	4579.0	3000.0	0.00	0.00	15
286.0	4582.0	3000.0	0.83	0.30	15
286.0	4585.0	3000.0	0.90	0.75	15
286.0	4588.0	3000.0	1.31	0.49	15
286.0	4591.0	3000.0	0.22	0.16	15
286.0	4594.0	3000.0	2.61	0.92	15
286.0	4597.0	3000.0	0.60	0.24	15
286.0	4600.0	3000.0	0.81	0.28	15
286.0	4603.0	3000.0	0.70	0.27	15
286.0	4606.0	3000.0	0.16	0.11	15
286.0	4609.0	3000.0	0.17	0.19	15
286.0	4612.0	3000.0	2.19	1.72	15
286.0	4615.0	3000.0	9.65	3.82	15
286.0	4618.0	3000.0	17.68	5.20	15
286.0	4621.0	3000.0	9.41	2.19	15
286.0	4624.0	3000.0	0.90	0.57	15
286.0	4627.0	3000.0	2.61	0.98	15
286.0	4630.0	3000.0	3.82	0.85	15
286.0	4633.0	3000.0	1.58	1.07	15

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286.0 4636.0 3000.0      4.31      1.72       15
286.0 4639.0 3000.0      2.42      1.07       15
286.0 4642.0 3000.0      0.65      0.44       15
286.0 4645.0 3000.0      0.68      0.74       15
286.0 4648.0 3000.0      3.38      1.09       15
286.0 4651.0 3000.0     15.11      3.96       15
286.0 4654.0 3000.0      9.26      2.82       15
289.0 4576.0 3000.0      0.00      0.00       15
289.0 4579.0 3000.0      0.60      0.00       15
289.0 4582.0 3000.0      2.01      1.07       15
289.0 4585.0 3000.0      1.15      0.43       15
289.0 4588.0 3000.0      4.55      1.88       15
289.0 4591.0 3000.0      7.14      2.04       15
289.0 4594.0 3000.0      2.91      1.06       15
289.0 4597.0 3000.0      0.18      0.15       15
289.0 4600.0 3000.0      0.29      0.24       15
289.0 4603.0 3000.0      0.49      0.37       15
289.0 4606.0 3000.0      0.86      0.96       15
289.0 4609.0 3000.0      3.54      0.94       15
289.0 4612.0 3000.0      2.82      0.85       15
289.0 4615.0 3000.0     14.64      5.24       15
289.0 4618.0 3000.0     26.90      8.38       15
289.0 4621.0 3000.0     10.39      3.47       15
289.0 4624.0 3000.0      0.93      0.75       15
289.0 4627.0 3000.0      1.20      1.11       15
289.0 4630.0 3000.0      2.42      1.28       15
289.0 4633.0 3000.0      5.26      1.77       15
289.0 4636.0 3000.0      3.94      2.06       15
289.0 4639.0 3000.0      2.87      1.37       15
289.0 4642.0 3000.0      6.24      1.88       15
289.0 4645.0 3000.0      0.45      0.48       15
289.0 4648.0 3000.0      1.90      1.53       15
289.0 4651.0 3000.0     27.72      7.96       15
289.0 4654.0 3000.0      2.08      2.09       15
292.0 4576.0 3000.0      0.00      0.00       15
292.0 4579.0 3000.0      0.08      0.02       15
292.0 4582.0 3000.0      1.05      0.76       15
292.0 4585.0 3000.0      3.96      1.87       15
292.0 [illegible] 3000.0      3.96      2.93       15
292.0 [illegible] 3000.0      1.61      1.93       15
292.0 [illegible] 3000.0      2.40      2.24       15
292.0 4597.0 3000.0      0.64      1.19       15
292.0 4600.0 3000.0      3.41      2.26       15
292.0 4603.0 3000.0      7.42      3.61       15
292.0 4606.0 3000.0      2.23      1.37       15
292.0 4609.0 3000.0     19.98      6.42       15
292.0 4612.0 3000.0      6.26      3.79       15
292.0 4615.0 3000.0      3.23      4.35       15
292.0 4618.0 3000.0      6.88      4.90       15
292.0 4621.0 3000.0     16.04      6.74       15
292.0 4624.0 3000.0      6.93      4.00       15
292.0 4627.0 3000.0     14.46      5.03       15
292.0 4630.0 3000.0      7.25      3.48       15
292.0 4633.0 3000.0     14.54      5.10       15
292.0 4636.0 3000.0     20.51      5.86       15
292.0 4639.0 3000.0      3.16      1.35       15
292.0 4642.0 3000.0     15.62      3.54       15
292.0 4645.0 3000.0      3.74      1.59       15
292.0 4648.0 3000.0      3.39      2.26       15
```

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292.0 4651.0 3000.0    31.05      9.37       15
292.0 4654.0 3000.0    19.62      6.80       15
295.0 4576.0 3000.0     0.00      0.00       15
295.0 4579.0 3000.0     0.00      0.00       15
295.0 4582.0 3000.0     0.00      0.00       15
295.0 4585.0 3000.0     0.00      0.00       15
295.0 4588.0 3000.0     0.06      0.02       15
295.0 4591.0 3000.0     0.87      0.50       15
295.0 4594.0 3000.0     2.63      1.01       15
295.0 4597.0 3000.0     5.13      1.54       15
295.0 4600.0 3000.0     3.16      1.61       15
295.0 4603.0 3000.0     2.84      1.17       15
295.0 4606.0 3000.0     7.23      2.41       15
295.0 4609.0 3000.0     4.20      1.78       15
295.0 4612.0 3000.0     4.63      1.72       15
295.0 4615.0 3000.0     5.71      3.34       15
295.0 4618.0 3000.0    16.41      7.47       15
295.0 4621.0 3000.0    31.94      9.81       15
295.0 4624.0 3000.0    24.21      9.56       15
295.0 4627.0 3000.0    47.95     16.45       15
295.0 4630.0 3000.0    54.85     18.16       15
295.0 4633.0 3000.0    39.49     17.00       15
295.0 4636.0 3000.0    15.46      6.77       15
295.0 4639.0 3000.0     1.21      1.25       15
295.0 4642.0 3000.0     2.28      1.62       15
295.0 4645.0 3000.0     8.45      3.43       15
295.0 4648.0 3000.0     6.90      3.02       15
295.0 4651.0 3000.0     1.64      1.47       15
295.0 4654.0 3000.0     4.17      2.08       15
298.0 4576.0 3000.0     0.00      0.00       15
298.0 4579.0 3000.0     0.00      0.00       15
298.0 4582.0 3000.0     0.00      0.00       15
298.0 4585.0 3000.0     0.00      0.00       15
298.0 4588.0 3000.0     0.00      0.00       15
298.0 4591.0 3000.0     1.10      0.35       15
298.0 4594.0 3000.0     0.61      0.25       15
298.0 4597.0 3000.0     1.08      0.47       15
298.0 4600.0 3000.0     0.28      0.09       15
298.0 4603.0 3000.0     0.00      0.00       15
298.0 4606.0 3000.0     1.27      0.32       15
298.0 4609.0 3000.0     3.21      0.80       15
298.0 4612.0 3000.0     0.28      0.15       15
298.0 4615.0 3000.0     2.03      1.35       15
298.0 4618.0 3000.0    11.80      6.61       15
298.0 4621.0 3000.0    14.56      7.77       15
298.0 4624.0 3000.0    43.50     12.01       15
298.0 4627.0 3000.0    59.31     19.89       15
298.0 4630.0 3000.0    66.96     21.31       15
298.0 4633.0 3000.0    70.36     22.05       15
298.0 4636.0 3000.0    46.06     15.77       15
298.0 4639.0 3000.0    30.24      8.16       15
298.0 4642.0 3000.0    13.87      4.16       15
298.0 4645.0 3000.0     4.94      2.50       15
298.0 4648.0 3000.0     1.47      1.14       15
298.0 4651.0 3000.0     0.92      0.94       15
298.0 4654.0 3000.0     0.95      0.95       15
301.0 4576.0 3000.0     0.00      0.00       15
301.0 4579.0 3000.0     0.00      0.00       15
301.0 4582.0 3000.0     0.00      0.00       15
```

301.0	4585.0	3000.0	0.00	0.00	15
301.0	4588.0	3000.0	0.00	0.00	15
301.0	4591.0	3000.0	9.31	1.40	15
301.0	4594.0	3000.0	7.90	1.20	15
301.0	4597.0	3000.0	4.55	1.44	15
301.0	4600.0	3000.0	0.53	0.21	15
301.0	4603.0	3000.0	0.33	0.14	15
301.0	4606.0	3000.0	0.03	0.01	15
301.0	4609.0	3000.0	0.00	0.00	15
301.0	4612.0	3000.0	0.02	0.01	15
301.0	4615.0	3000.0	2.10	1.71	15
301.0	4618.0	3000.0	4.69	4.04	15
301.0	4621.0	3000.0	5.03	1.88	15
301.0	4624.0	3000.0	17.18	4.19	15
301.0	4627.0	3000.0	2[illegible].15	5.96	15
301.0	4630.0	3000.0	26.30	8.78	15
301.0	4633.0	3000.0	51.05	16.12	15
301.0	4636.0	3000.0	62.36	17.99	15
301.0	4639.0	3000.0	58.96	15.38	15
301.0	4642.0	3000.0	7.52	2.63	15
301.0	4645.0	3000.0	4.06	1.48	15
301.0	4648.0	3000.0	1.56	0.98	15
301.0	4651.0	3000.0	0.50	0.61	15
301.0	4654.0	3000.0	0.43	0.59	15
304.0	4576.0	3000.0	0.00	0.00	15
304.0	4579.0	3000.0	0.00	0.00	15
304.0	4582.0	3000.0	0.00	0.00	15
304.0	4585.0	3000.0	0.00	0.00	15
304.0	4588.0	3000.0	0.00	0.00	15
304.0	4591.0	3000.0	1.75	1.44	15
304.0	4594.0	3000.0	8.32	2.43	15
304.0	4597.0	3000.0	8.54	1.77	15
304.0	4600.0	3000.0	8.00	0.73	15
304.0	4603.0	3000.0	5.79	0.53	15
304.0	4606.0	3000.0	1.11	0.24	15
304.0	4609.0	3000.0	0.09	0.02	15
304.0	4612.0	3000.0	2.92	0.29	15
304.0	4615.0	3000.0	4.28	0.44	15
304.0	4618.0	3000.0	3.68	0.36	15
304.0	4621.0	3000.0	6.72	1.53	15
304.0	4624.0	3000.0	12.35	5.55	15
304.0	4627.0	3000.0	8.73	4.35	15
304.0	4630.0	3000.0	21.61	5.90	15
304.0	4633.0	3000.0	23.25	7.14	15
304.0	4636.0	3000.0	18.72	7.42	15
304.0	4639.0	3000.0	17.67	6.15	15
304.0	4642.0	3000.0	2.64	1.62	15
304.0	4645.0	3000.0	1.89	1.19	15
304.0	4648.0	3000.0	10.25	3.12	15
304.0	4651.0	3000.0	10.96	3.21	15
304.0	4654.0	3000.0	1.55	0.89	15
307.0	4576.0	3000.0	0.00	0.00	15
307.0	4579.0	3000.0	0.00	0.00	15
307.0	4582.0	3000.0	0.00	0.00	15
307.0	4585.0	3000.0	0.00	0.00	15
307.0	4588.0	3000.0	0.00	0.00	15
307.0	4591.0	3000.0	5.05	1.67	15
307.0	4594.0	3000.0	10.40	3.75	15
307.0	4597.0	3000.0	12.14	5.20	15

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307.0 4600.0 3000.0     4.22     1.86     15
307.0 4603.0 3000.0    13.47     2.65     15
307.0 4606.0 3000.0     8.74     0.87     15
307.0 4609.0 3000.0     7.12     0.66     15
307.0 4612.0 3000.0     0.19     0.08     15
307.0 4615.0 3000.0     1.49     0.45     15
307.0 4618.0 3000.0     1.49     0.55     15
307.0 4621.0 3000.0     7.99     3.09     15
307.0 4624.0 3000.0     2.32     1.04     15
307.0 4627.0 3000.0     3.97     1.54     15
307.0 4630.0 3000.0     0.92     1.01     15
307.0 4633.0 3000.0     1.23     1.01     15
307.0 4636.0 3000.0     0.76     0.83     15
307.0 4639.0 3000.0     3.14     1.60     15
307.0 4642.0 3000.0     6.27     2.35     15
307.0 4645.0 3000.0    11.72     3.11     15
307.0 4648.0 3000.0    10.06     2.79     15
307.0 4651.0 3000.0     9.79     2.73     15
307.0 4654.0 3000.0     1.95     1.33     15
310.0 4576.0 3000.0     0.00     0.00     15
310.0 4579.0 3000.0     0.00     0.00     15
310.0 4582.0 3000.0     0.00     0.00     15
310.0 4585.0 3000.0     0.00     0.00     15
310.0 4588.0 3000.0     0.00     0.00     15
310.0 4591.0 3000.0     0.31     0.07     15
310.0 4594.0 3000.0     1.47     0.54     15
310.0 4597.0 3000.0     1.46     0.61     15
310.0 4600.0 3000.0     0.90     0.95     15
310.0 4603.0 3000.0     3.84     1.82     15
310.0 4606.0 3000.0     3.32     2.58     15
310.0 4609.0 3000.0    19.89     5.51     15
310.0 4612.0 3000.0     3.90     1.64     15
310.0 4615.0 3000.0    22.01     5.99     15
310.0 4618.0 3000.0     7.81     3.52     15
310.0 4621.0 3000.0    14.02     4.21     15
310.0 4624.0 3000.0     2.47     1.08     15
310.0 4627.0 3000.0     0.16     0.32     15
310.0 4630.0 3000.0     0.44     0.36     15
310.0 4633.0 3000.0     0.38     0.35     15
310.0 4636.0 3000.0     0.30     0.33     15
310.0 4639.0 3000.0     0.40     0.36     15
310.0 4642.0 3000.0     5.96     2.21     15
310.0 4645.0 3000.0    24.34     5.57     15
310.0 4648.0 3000.0     1.34     1.13     15
310.0 4651.0 3000.0     1.25     0.64     15
310.0 4654.0 3000.0     1.01     1.42     15
313.0 4576.0 3000.0     0.00     0.00     15
313.0 4579.0 3000.0     0.00     0.00     15
313.0 4582.0 3000.0     0.00     0.00     15
313.0 4585.0 3000.0     0.00     0.00     15
313.0 4588.0 3000.0     0.00     0.00     15
313.0 4591.0 3000.0     0.00     0.00     15
313.0 4594.0 3000.0     0.01     0.00     15
313.0 4597.0 3000.0     0.36     0.14     15
313.0 4600.0 3000.0     0.45     0.17     15
313.0 4603.0 3000.0     0.41     0.16     15
313.0 4606.0 3000.0     0.48     0.15     15
313.0 4609.0 3000.0     7.49     3.20     15
313.0 4612.0 3000.0     3.42     0.86     15
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313.0 4615.0 3000.0     1.87     0.21     15
313.0 4618.0 3000.0     1.15     0.51     15
313.0 4621.0 3000.0     1.50     0.93     15
313.0 4624.0 3000.0     3.14     1.27     15
313.0 4627.0 3000.0     0.61     0.48     15
313.0 4630.0 3000.0     0.81     0.46     15
313.0 4633.0 3000.0     2.39     0.73     15
313.0 4636.0 3000.0     0.65     0.42     15
313.0 4639.0 3000.0     0.90     0.48     15
313.0 4642.0 3000.0     1.74     1.28     15
313.0 4645.0 3000.0     2.15     1.11     15
313.0 4648.0 3000.0     0.72     0.41     15
313.0 4651.0 3000.0     0.87     0.43     15
313.0 4654.0 3000.0     3.98     1.15     15
316.0 4576.0 3000.0     0.00     0.00     15
316.0 4579.0 3000.0     0.00     0.00     15
316.0 4582.0 3000.0     0.00     0.00     15
316.0 4585.0 3000.0     0.00     0.00     15
316.0 4588.0 3000.0     0.00     0.00     15
316.0 4591.0 3000.0     0.54     0.21     15
316.0 4594.0 3000.0     0.68     0.27     15
316.0 4597.0 3000.0     0.45     0.23     15
316.0 4600.0 3000.0     0.26     0.18     15
316.0 4603.0 3000.0     0.80     0.47     15
316.0 4606.0 3000.0     1.16     0.64     15
316.0 4609.0 3000.0     0.86     0.50     15
316.0 4612.0 3000.0     4.35     3.42     15
316.0 4615.0 3000.0    39.94     7.55     15
316.0 4618.0 3000.0    29.35     5.57     15
316.0 4621.0 3000.0     9.65     3.22     15
316.0 4624.0 3000.0     1.74     1.04     15
316.0 4627.0 3000.0     1.50     0.76     15
316.0 4630.0 3000.0     0.25     0.30     15
316.0 [illegible].0 3000.0     0.68     0.41     15
316.0 4636.0 3000.0     0.71     0.40     15
316.0 4639.0 3000.0     0.83     0.61     15
316.0 4642.0 3000.0     0.50     0.42     15
316.0 4645.0 3000.0     5.87     1.37     15
316.0 4648.0 3000.0     2.83     0.88     15
316.0 4651.0 3000.0     2.94     0.87     15
316.0 4654.0 3000.0    17.36     3.53     15
319.0 4576.0 3000.0     0.00     0.00     15
319.0 4579.0 3000.0     0.00     0.00     15
319.0 4582.0 3000.0     0.00     0.00     15
319.0 4585.0 3000.0     0.00     0.00     15
319.0 4588.0 3000.0     0.00     0.00     15
319.0 4591.0 3000.0     0.17     0.05     15
319.0 4594.0 3000.0     0.46     0.20     15
319.0 4597.0 3000.0     0.21     0.15     15
319.0 4600.0 3000.0     0.15     0.14     15
319.0 4603.0 3000.0     0.50     0.39     15
319.0 4606.0 3000.0     0.57     0.47     15
319.0 4609.0 3000.0     1.63     0.75     15
319.0 4612.0 3000.0     2.06     1.64     15
319.0 4615.0 3000.0    44.09    11.46     15
319.0 4618.0 3000.0    63.71    12.57     15
319.0 4621.0 3000.0    20.64     5.99     15
319.0 4624.0 3000.0     4.08     2.07     15
319.0 4627.0 3000.0     0.81     0.91     15
```

```
319.0 4630.0 3000.0     1.71     0.51     15
319.0 4633.0 3000.0     0.60     0.36     15
319.0 4636.0 3000.0     1.74     0.57     15
319.0 4639.0 3000.0     0.89     0.81     15
319.0 4642.0 3000.0     1.31     0.71     15
319.0 4645.0 3000.0     2.36     0.70     15
319.0 4648.0 3000.0     1.35     0.56     15
319.0 4651.0 3000.0     0.77     0.43     15
319.0 4654.0 3000.0     0.76     0.41     15
```

b. 1980

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262.0 4576.0 3000.0    1.59    0.58    15
262.0 4579.0 3000.0    5.14    1.39    15
262.0 4582.0 3000.0   18.22    5.12    15
262.0 4585.0 3000.0    4.38    1.60    15
262.0 4588.0 3000.0    0.35    0.58    15
262.0 4591.0 3000.0    0.84    1.00    15
262.0 4594.0 3000.0    0.29    0.65    15
262.0 4597.0 3000.0    0.10    0.10    15
262.0 4600.0 3000.0    0.09    0.09    15
262.0 4603.0 3000.0    0.02    0.05    15
262.0 4606.0 3000.0    0.02    0.05    15
262.0 4609.0 3000.0    0.04    0.08    15
262.0 4612.0 3000.0    0.08    0.09    15
262.0 4615.0 3000.0    0.09    0.10    15
262.0 4618.0 3000.0    0.17    0.12    15
262.0 4621.0 3000.0    0.15    0.10    15
262.0 4624.0 3000.0    0.17    0.08    15
262.0 4627.0 3000.0    0.16    0.08    15
262.0 4630.0 3000.0    1.85    0.65    15
262.0 4633.0 3000.0    0.18    0.09    15
262.0 4636.0 3000.0    0.24    0.32    15
262.0 4639.0 3000.0    3.55    0.66    15
262.0 4642.0 3000.0    2.15    0.69    15
262.0 4645.0 3000.0    0.10    0.06    15
262.0 4648.0 3000.0    0.19    0.09    15
262.0 4651.0 3000.0    0.02    0.04    15
262.0 4654.0 3000.0    0.18    0.09    15
265.0 4576.0 3000.0    0.37    0.16    15
265.0 4579.0 3000.0    2.78    1.67    15
265.0 4582.0 3000.0    1.54    0.59    15
265.0 4585.0 3000.0    3.57    1.47    15
265.0 4588.0 3000.0    2.67    1.10    15
265.0 4591.0 3000.0    0.84    1.00    15
265.0 4594.0 3000.0    0.36    0.67    15
265.0 4597.0 3000.0    0.10    0.10    15
265.0 4600.0 3000.0    0.09    0.09    15
265.0 4603.0 3000.0    0.02    0.05    15
265.0 4606.0 3000.0    0.02    0.05    15
265.0 4609.0 3000.0    0.04    0.08    15
265.0 4612.0 3000.0    0.08    0.09    15
265.0 4615.0 3000.0    0.09    0.10    15
265.0 4618.0 3000.0    0.17    0.12    15
265.0 4621.0 3000.0    0.15    0.10    15
265.0 4624.0 3000.0    0.17    0.08    15
265.0 4627.0 3000.0    0.16    0.08    15
265.0 4630.0 3000.0    1.85    0.65    15
265.0 4633.0 3000.0    0.18    0.09    15
265.0 4636.0 3000.0    0.24    0.32    15
265.0 4639.0 3000.0    3.55    0.66    15
265.0 4642.0 3000.0    2.15    0.69    15
265.0 4645.0 3000.0    0.10    0.06    15
265.0 4648.0 3000.0    0.19    0.09    15
265.0 4651.0 3000.0    0.02    0.04    15
265.0 4654.0 3000.0    0.18    0.09    15
268.0 4576.0 3000.0    0.60    0.18    15
268.0 4579.0 3000.0    1.93    1.54    15
268.0 4582.0 3000.0    0.38    0.38    15
268.0 4585.0 3000.0    6.75    1.55    15
268.0 4588.0 3000.0    0.30    0.28    15
```

268.0	4591.0	3000.0	0.70	0.75	15
268.0	4594.0	3000.0	0.51	0.72	15
268.0	4597.0	3000.0	[illegible]	[illegible]	15
268.0	4600.0	3000.0	[illegible]	[illegible]	15
268.0	4603.0	3000.0	[illegible]	[illegible]	15
268.0	4606.0	3000.0	0.05	0.06	15
268.0	4609.0	3000.0	0.05	0.08	15
268.0	4612.0	3000.0	0.08	0.09	15
268.0	4615.0	3000.0	[illegible]	0.10	15
268.0	4618.0	3000.0	0.17	0.12	15
268.0	4621.0	3000.0	0.15	0.10	15
268.0	4624.0	3000.0	0.17	0.08	15
268.0	4627.0	3000.0	0.16	0.08	15
268.0	4630.0	3000.0	1.85	0.65	15
268.0	4633.0	3000.0	0.18	0.09	15
268.0	4636.0	3000.0	0.24	0.32	15
268.0	4639.0	3000.0	3.55	0.66	15
268.0	4642.0	3000.0	2.15	0.69	15
268.0	4645.0	3000.0	0.10	0.06	15
268.0	4648.0	3000.0	0.19	0.09	15
268.0	4651.0	3000.0	0.02	0.04	15
268.0	4654.0	3000.0	0.18	0.09	15
271.0	4576.0	3000.0	0.03	0.01	15
271.0	4579.0	3000.0	0.64	0.43	15
271.0	4582.0	3000.0	0.16	0.18	15
271.0	4585.0	3000.0	0.14	0.15	15
271.0	4588.0	3000.0	0.32	0.29	15
271.0	4591.0	3000.0	1.35	0.33	15
271.0	4594.0	3000.0	0.60	0.99	15
271.0	4597.0	3000.0	2.00	0.86	15
271.0	4600.0	3000.0	0.31	0.14	15
271.0	4603.0	3000.0	0.11	0.07	15
271.0	4606.0	3000.0	0.09	0.07	15
271.0	4609.0	3000.0	0.04	0.08	15
271.0	4612.0	3000.0	0.04	0.08	15
271.0	4615.0	3000.0	0.09	0.10	15
271.0	4618.0	3000.0	0.21	0.13	15
271.0	4621.0	3000.0	0.15	0.10	15
271.0	4624.0	3000.0	0.05	0.05	15
271.0	4627.0	3000.0	1.91	0.39	15
271.0	4630.0	3000.0	0.32	0.32	15
271.0	4633.0	3000.0	0.28	0.26	15
271.0	4636.0	3000.0	2.12	0.67	15
271.0	4639.0	3000.0	0.09	0.06	15
271.0	4642.0	3000.0	0.39	0.39	15
271.0	4645.0	3000.0	0.07	0.06	15
271.0	4648.0	3000.0	1.32	0.43	15
271.0	4651.0	3000.0	0.40	0.13	15
271.0	4654.0	3000.0	0.33	0.13	15
274.0	4576.0	3000.0	0.00	0.00	15
274.0	4579.0	3000.0	0.10	0.03	15
274.0	4582.0	3000.0	0.95	0.53	15
274.0	4585.0	3000.0	0.04	0.04	15
274.0	4588.0	3000.0	2.96	0.59	15
274.0	4591.0	3000.0	0.41	0.29	15
274.0	4594.0	3000.0	0.06	0.09	15
274.0	4597.0	3000.0	1.29	1.57	15
274.0	4600.0	3000.0	0.66	1.14	15
274.0	4603.0	3000.0	0.28	0.12	15

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274.0 4606.0 3000.0     0.07     0.07     15
274.0 4609.0 3000.0     0.08     0.11     15
274.0 4612.0 3000.0     0.24     0.22     15
274.0 4615.0 3000.0     0.23     0.13     15
274.0 4618.0 3000.0     0.56     0.28     15
274.0 4621.0 3000.0     0.08     0.15     15
274.0 4624.0 3000.0     0.08     0.17     15
274.0 4627.0 3000.0     0.16     0.20     15
274.0 4630.0 3000.0     0.10     0.06     15
274.0 4633.0 3000.0     0.56     0.50     15
274.0 4636.0 3000.0     0.28     0.25     15
274.0 4639.0 3000.0     0.14     0.08     15
274.0 4642.0 3000.0     0.74     0.50     15
274.0 4645.0 3000.0     1.66     0.47     15
274.0 4648.0 3000.0     5.76     1.42     15
274.0 4651.0 3000.0     0.16     0.08     15
274.0 4654.0 3000.0     0.65     0.23     15
277.0 4576.0 3000.0     0.00     0.00     15
277.0 4579.0 3000.0     0.02     0.01     15
277.0 4582.0 3000.0     0.79     0.29     15
277.0 4585.0 3000.0     0.36     0.54     15
277.0 4588.0 3000.0     0.43     0.34     15
277.0 4591.0 3000.0     1.51     0.73     15
277.0 4594.0 3000.0     0.15     0.20     15
277.0 4597.0 3000.0     0.50     0.39     15
277.0 4600.0 3000.0     0.08     0.10     15
277.0 4603.0 3000.0     0.88     1.73     15
277.0 4606.0 3000.0     1.11     1.51     15
277.0 4609.0 3000.0     0.78     0.87     15
277.0 4612.0 3000.0     0.06     0.09     15
277.0 4615.0 3000.0     0.38     0.17     15
277.0 4618.0 3000.0     0.36     0.36     15
277.0 4621.0 3000.0     0.45     0.18     15
277.0 4624.0 3000.0     0.10     0.07     15
277.0 4627.0 3000.0     0.97     0.34     15
277.0 4630.0 3000.0     0.20     0.10     15
277.0 4633.0 3000.0     0.91     1.06     15
277.0 4636.0 3000.0     0.19     0.15     15
277.0 4639.0 3000.0     0.67     0.30     15
277.0 4642.0 3000.0     1.27     1.06     15
277.0 4645.0 3000.0     0.72     0.70     15
277.0 4648.0 3000.0     4.30     1.21     15
277.0 4651.0 3000.0     0.32     0.13     15
277.0 4654.0 3000.0     0.02     0.04     15
280.0 4576.0 3000.0     0.00     0.00     15
280.0 4579.0 3000.0     0.01     0.00     15
280.0 4582.0 3000.0     0.65     0.27     15
280.0 4585.0 3000.0     0.49     0.55     15
280.0 4588.0 3000.0     0.11     0.07     15
280.0 4591.0 3000.0     1.92     0.48     15
280.0 4594.0 3000.0     0.28     0.40     15
280.0 4597.0 3000.0     0.22     0.25     15
280.0 4600.0 3000.0     0.12     0.09     15
280.0 4603.0 3000.0     0.12     0.08     15
280.0 4606.0 3000.0     0.14     0.17     15
280.0 4609.0 3000.0     0.62     1.03     15
280.0 4612.0 3000.0     0.78     1.29     15
280.0 4615.0 3000.0     1.05     0.37     15
280.0 4618.0 3000.0     2.54     0.95     15
```

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280.0 4621.0 3000.0     0.30     0.15     15
280.0 4624.0 3000.0     0.19     0.10     15
280.0 4627.0 3000.0     1.06     0.23     15
280.0 4630.0 3000.0     0.63     0.23     15
280.0 4633.0 3000.0     2.04     1.28     15
280.0 4636.0 3000.0     1.05     0.24     15
280.0 4639.0 3000.0     1.22     0.44     15
280.0 4642.0 3000.0     0.48     0.33     15
280.0 4645.0 3000.0     3.54     0.97     15
280.0 4648.0 3000.0     1.93     1.08     15
280.0 4651.0 3000.0     1.33     0.32     15
280.0 4654.0 3000.0     0.02     0.04     15
283.0 4576.0 3000.0     0.00     0.00     15
283.0 4579.0 3000.0     0.00     0.00     15
283.0 4582.0 3000.0     0.15     0.10     15
283.0 4585.0 3000.0     0.48     0.66     15
283.0 4588.0 3000.0     0.15     0.15     15
283.0 4591.0 3000.0     0.05     0.12     15
283.0 4594.0 3000.0     0.36     0.39     15
283.0 4597.0 3000.0     0.22     0.24     15
283.0 4600.0 3000.0     0.09     0.07     15
283.0 4603.0 3000.0     0.08     0.07     15
283.0 4606.0 3000.0     0.13     0.15     15
283.0 4609.0 3000.0     0.05     0.08     15
283.0 4612.0 3000.0     1.36     1.45     15
283.0 4615.0 3000.0     3.42     1.73     15
283.0 4618.0 3000.0     9.18     2.07     15
283.0 4621.0 3000.0     0.63     0.22     15
283.0 4624.0 3000.0     0.47     0.14     15
283.0 4627.0 3000.0     0.26     0.13     15
283.0 4630.0 3000.0     0.14     0.17     15
283.0 4633.0 3000.0     2.86     1.51     15
283.0 4636.0 3000.0     1.58     0.43     15
283.0 4639.0 3000.0     0.63     0.47     15
283.0 4642.0 3000.0     0.07     0.07     15
283.0 4645.0 3000.0     0.12     0.09     15
283.0 4648.0 3000.0     0.72     0.65     15
283.0 4651.0 3000.0     0.80     0.56     15
283.0 4654.0 3000.0     0.94     0.61     15
286.0 4576.0 3000.0     0.00     0.00     15
286.0 4579.0 3000.0     0.00     0.00     15
286.0 4582.0 3000.0     0.79     0.29     15
286.0 4585.0 3000.0     0.86     0.78     15
286.0 4588.0 3000.0     1.28     0.50     15
286.0 4591.0 3000.0     0.21     0.16     15
286.0 4594.0 3000.0     2.55     0.94     15
286.0 4597.0 3000.0     0.55     0.24     15
286.0 4600.0 3000.0     0.78     0.28     15
286.0 4603.0 3000.0     0.67     0.27     15
286.0 4606.0 3000.0     0.15     0.11     15
286.0 4609.0 3000.0     0.17     0.20     15
286.0 4612.0 3000.0     2.14     1.81     15
286.0 4615.0 3000.0     9.30     3.86     15
286.0 4618.0 3000.0    17.33     5.25     15
286.0 4621.0 3000.0     9.28     2.17     15
286.0 4624.0 3000.0     0.87     0.59     15
286.0 4627.0 3000.0     2.54     0.98     15
286.0 4630.0 3000.0     3.80     0.85     15
286.0 4633.0 3000.0     1.52     1.11     15
```

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286.0 4636.0 3000.0      4.17       1.74        15
286.0 4639.0 3000.0      2.30       1.08        15
286.0 4642.0 3000.0      0.61       0.45        15
286.0 4645.0 3000.0      0.67       0.78        15
286.0 4648.0 3000.0      3.37       1.12        15
286.0 4651.0 3000.0     15.09       4.04        15
286.0 4654.0 3000.0     11.10       3.23        15
289.0 4576.0 3000.0      0.00       0.00        15
289.0 4579.0 3000.0      0.00       0.00        15
289.0 4582.0 3000.0      1.80       1.05        15
289.0 4585.0 3000.0      1.03       0.40        15
289.0 4588.0 3000.0      4.38       1.89        15
289.0 4591.0 3000.0      6.98       2.05        15
289.0 4594.0 3000.0      2.81       1.07        15
289.0 4597.0 3000.0      0.16       0.16        15
289.0 4600.0 3000.0      0.26       0.24        15
289.0 4603.0 3000.0      0.46       0.38        15
289.0 4606.0 3000.0      0.82       1.01        15
289.0 4609.0 3000.0      3.49       0.95        15
289.0 4612.0 3000.0      2.76       0.86        15
289.0 4615.0 3000.0     14.24       5.28        15
289.0 4618.0 3000.0     26.30       8.41        15
289.0 4621.0 3000.0     10.15       3.49        15
289.0 4624.0 3000.0      0.89       0.78        15
289.0 4627.0 3000.0      1.16       1.16        15
289.0 4630.0 3000.0      2.39       1.33        15
289.0 4633.0 3000.0      5.21       1.82        15
289.0 4636.0 3000.0      3.83       2.13        15
289.0 4639.0 3000.0      2.71       1.37        15
289.0 4642.0 3000.0      6.13       1.91        15
289.0 4645.0 3000.0      0.44       0.50        15
289.0 4648.0 3000.0      1.67       1.60        15
289.0 4651.0 3000.0     27.10       7.91        15
289.0 4654.0 3000.0      2.20       2.23        15
292.0 4576.0 3000.0      0.00       0.00        15
292.0 4579.0 3000.0      0.08       0.02        15
292.0 4582.0 3000.0      0.95       0.77        15
292.0 4585.0 3000.0      3.78       1.91        15
292.0 4588.0 3000.0      3.82       3.05        15
292.0 4591.0 3000.0      1.57       2.04        15
292.0 4594.0 3000.0      2.31       2.35        15
292.0 4597.0 3000.0      0.61       1.26        15
292.0 4600.0 3000.0      3.26       2.35        15
292.0 4603.0 3000.0      7.02       3.66        15
292.0 4606.0 3000.0      2.05       1.40        15
292.0 4609.0 3000.0     19.46       6.48        15
292.0 4612.0 3000.0      6.12       3.93        15
292.0 4615.0 3000.0      3.16       4.60        15
292.0 4618.0 3000.0      6.77       5.13        15
292.0 4621.0 3000.0     15.72       6.91        15
292.0 4624.0 3000.0      6.66       4.08        15
292.0 4627.0 3000.0     14.08       5.05        15
292.0 4630.0 3000.0      6.99       3.55        15
292.0 4633.0 3000.0     14.26       [illegible] 15
292.0 4636.0 3000.0     20.23       [illegible] 15
292.0 4639.0 3000.0      3.03       [illegible] 15
292.0 4642.0 3000.0     15.36       3.52        15
292.0 4645.0 3000.0      3.68       1.04        15
292.0 4648.0 3000.0      3.27       2.34        15
```

292.0	4651.0	3000.0	30.34	9.32	15
292.0	4654.0	3000.0	21.45	7.24	15
295.0	4576.0	3000.0	0.00	0.00	15
295.0	4579.0	3000.0	0.00	0.00	15
295.0	4582.0	3000.0	0.00	0.00	15
295.0	4585.0	3000.0	0.00	0.00	15
295.0	4588.0	3000.0	0.05	0.02	15
295.0	4591.0	3000.0	0.84	0.51	15
295.0	4594.0	3000.0	2.44	0.99	15
295.0	4597.0	3000.0	4.90	1.52	15
295.0	4600.0	3000.0	3.01	1.64	15
295.0	4603.0	3000.0	2.57	1.13	15
295.0	4606.0	3000.0	6.56	2.31	15
295.0	4609.0	3000.0	3.81	1.74	15
295.0	4612.0	3000.0	4.53	1.73	15
295.0	4615.0	3000.0	5.64	3.47	15
295.0	4618.0	3000.0	16.18	7.69	15
295.0	4621.0	3000.0	31.59	9.95	15
295.0	4624.0	3000.0	23.71	9.75	15
295.0	4627.0	3000.0	46.91	16.60	15
295.0	4630.0	3000.0	54.46	18.47	15
295.0	4633.0	3000.0	39.14	17.40	15
295.0	4636.0	3000.0	15.33	6.97	15
295.0	4639.0	3000.0	1.16	1.30	15
295.0	4642.0	3000.0	2.20	1.68	15
295.0	4645.0	3000.0	8.28	3.53	15
295.0	4648.0	3000.0	6.67	3.07	15
295.0	4651.0	3000.0	1.57	1.53	15
295.0	4654.0	3000.0	4.43	2.19	15
298.0	4576.0	3000.0	0.00	0.00	15
298.0	4579.0	3000.0	0.00	0.00	15
298.0	4582.0	3000.0	0.00	0.00	15
298.0	4585.0	3000.0	0.00	0.00	15
298.0	4588.0	3000.0	0.00	0.00	15
298.0	4591.0	3000.0	1.08	0.35	15
298.0	4594.0	3000.0	0.58	0.25	15
298.0	4597.0	3000.0	0.98	0.46	15
298.0	4600.0	3000.0	0.25	0.09	15
298.0	4603.0	3000.0	0.00	0.00	15
298.0	4606.0	3000.0	1.16	0.30	15
298.0	4609.0	3000.0	2.91	0.74	15
298.0	4612.0	3000.0	0.27	0.15	15
298.0	4615.0	3000.0	2.00	1.40	15
298.0	4618.0	3000.0	11.63	6.84	15
298.0	4621.0	3000.0	14.37	7.99	15
298.0	4624.0	3000.0	42.99	12.13	15
298.0	4627.0	3000.0	58.94	20.32	15
298.0	4630.0	3000.0	66.45	21.71	15
298.0	4633.0	3000.0	69.94	22.48	15
298.0	4636.0	3000.0	45.95	16.16	15
298.0	4639.0	3000.0	29.45	8.06	15
298.0	4642.0	3000.0	13.58	4.19	15
298.0	4645.0	3000.0	4.81	2.57	15
298.0	4648.0	3000.0	1.39	1.17	15
298.0	4651.0	3000.0	0.89	0.99	15
298.0	4654.0	3000.0	0.91	1.00	15
301.0	4576.0	3000.0	0.00	0.00	15
301.0	4579.0	3000.0	0.00	0.00	15
301.0	4582.0	3000.0	0.00	0.00	15

```
301.0 4585.0 3000.0      0.00      0.00      15
301.0 4588.0 3000.0      0.00      0.00      15
301.0 4591.0 3000.0      9.30      1.44      15
301.0 4594.0 3000.0      7.85      1.20      15
301.0 4597.0 3000.0      4.52      1.50      15
301.0 4600.0 3000.0      0.51      0.21      15
301.0 4603.0 3000.0      0.32      0.14      15
301.0 4606.0 3000.0      0.03      0.01      15
301.0 4609.0 3000.0      0.00      0.00      15
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301.0 4615.0 3000.0      2.07      1.79      15
301.0 4618.0 3000.0      4.01      4.24      15
301.0 4621.0 3000.0      4.96      1.92      15
301.0 4624.0 3000.0     17.09      4.25      15
301.0 4627.0 3000.0     29.13      6.10      15
301.0 4630.0 3000.0     26.24      9.03      15
301.0 4633.0 3000.0     50.02     16.47      15
301.0 4636.0 3000.0     62.38     18.[illegible]      15
301.0 4639.0 3000.0     59.12     15.92      15
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304.0 4582.0 3000.0      0.00      0.00      15
304.0 4585.0 3000.0      0.00      0.00      15
304.0 4588.0 3000.0      0.00      0.00      15
304.0 4591.0 3000.0      1.71      1.50      15
304.0 4594.0 3000.0      8.19      2.43      15
304.0 4597.0 3000.0      8.41      1.76      15
304.0 4600.0 3000.0      7.99      0.73      15
304.0 4603.0 3000.0      5.79      0.53      15
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304.0 4609.0 3000.0      0.09      0.02      15
304.0 4612.0 3000.0      2.92      0.29      15
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304.0 4621.0 3000.0      6.74      1.56      15
304.0 4624.0 3000.0     12.37      5.74      15
304.0 4627.0 3000.0      6.66      4.53      15
304.0 4630.0 3000.0     22.15      6.12      15
304.0 4633.0 3000.0     23.69      7.41      15
304.0 4636.0 3000.0     18.86      7.66      15
304.0 4639.0 3000.0     18.18      6.39      15
304.0 4642.0 3000.0      2.54      1.60      15
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304.0 4648.0 3000.0     10.91      3.26      15
304.0 4651.0 3000.0     12.73      3.58      15
304.0 4654.0 3000.0      1.72      0.96      15
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307.0 4579.0 3000.0      0.00      0.00      15
307.0 4582.0 3000.0      0.00      0.00      15
307.0 4585.0 3000.0      0.00      0.00      15
307.0 4588.0 3000.0      0.00      0.00      15
307.0 4591.0 3000.0      4.92      1.64      15
307.0 4594.0 3000.0     10.17      3.76      15
307.0 4597.0 3000.0     11.93      5.32      15
```

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307.0 4609.0 3000.0     7.12     0.66      15
307.0 4612.0 3000.0     0.19     0.09      15
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307.0 4621.0 3000.0     8.00     3.18      15
307.0 4624.0 3000.0     2.33     1.07      15
307.0 4627.0 3000.0     4.47     1.69      15
307.0 4630.0 3000.0     0.89     1.07      15
307.0 4633.0 3000.0     1.19     1.06      15
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307.0 4639.0 3000.0     3.25     1.67      15
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307.0 4645.0 3000.0    13.89     3.55      15
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307.0 4651.0 3000.0    11.61     3.10      15
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310.0 4588.0 3000.0     0.00     0.00      15
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310.0 4612.0 3000.0     3.85     1.70      15
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310.0 4618.0 3000.0     7.71     3.63      15
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310.0 4633.0 3000.0     0.37     0.37      15
310.0 4636.0 3000.0     0.29     0.35      15
310.0 4639.0 3000.0     0.38     0.37      15
310.0 4642.0 3000.0     6.61     2.39      15
310.0 4645.0 3000.0    28.62     6.38      15
310.0 4648.0 3000.0     1.29     1.18      15
310.0 4651.0 3000.0     1.20     0.65      15
310.0 4654.0 3000.0     0.97     1.50      15
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313.0 4588.0 3000.0     0.00     0.00      15
313.0 4591.0 3000.0     0.00     0.00      15
313.0 4594.0 3000.0     0.01     0.00      15
313.0 4597.0 3000.0     0.33     0.13      15
313.0 4600.0 3000.0     0.44     0.17      15
313.0 4603.0 3000.0     0.40     0.16      15
313.0 4606.0 3000.0     0.47     0.15      15
313.0 4609.0 3000.0     6.77     3.18      15
313.0 4612.0 3000.0     3.40     0.89      15
```

```
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313.0 4618.0 3000.0      1.15      0.52       15
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313.0 4624.0 3000.0      3.26      1.34       15
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313.0 4630.0 3000.0      0.78      0.47       15
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313.0 4636.0 3000.0      0.52      0.43       15
313.0 4639.0 3000.0      0.86      0.49       15
313.0 4642.0 3000.0      1.67      1.33       15
313.0 4645.0 3000.0      2.06      1.13       15
313.0 4648.0 3000.0      0.69      0.41       15
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313.0 4654.0 3000.0      4.24      1.19       15
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316.0 4582.0 3000.0      0.00      0.00       15
316.0 4585.0 3000.0      0.00      0.00       15
316.0 4588.0 3000.0      0.00      0.00       15
316.0 4591.0 3000.0      0.51      0.21       15
316.0 4594.0 3000.0      0.63      0.26       15
316.0 4597.0 3000.0      0.42      0.23       15
316.0 4600.0 3000.0      0.26      0.19       15
316.0 4603.0 3000.0      0.78      0.49       15
316.0 4606.0 3000.0      1.13      0.56       15
316.0 4609.0 3000.0      0.34      0.52       15
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316.0 4618.0 3000.0     31.52      5.97       15
316.0 4621.0 3000.0      9.92      3.32       15
316.0 4624.0 3000.0      1.73      1.08       15
316.0 4627.0 3000.0      1.67      0.83       15
316.0 4630.0 3000.0      0.24      0.31       15
316.0 4633.0 3000.0      0.65      0.42       15
316.0 4636.0 3000.0      0.68      0.41       15
316.0 4639.0 3000.0      0.80      0.64       15
316.0 4642.0 3000.0      0.48      0.44       15
316.0 4645.0 3000.0      6.71      1.53       15
316.0 4648.0 3000.0      2.94      0.91       15
316.0 4651.0 3000.0      3.24      0.93       15
316.0 4654.0 3000.0     20.37      4.05       15
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319.0 4585.0 3000.0      0.00      0.00       15
319.0 4588.0 3000.0      0.00      0.00       15
319.0 4591.0 3000.0      0.15      0.04       15
319.0 4594.0 3000.0      0.43      0.20       15
319.0 4597.0 3000.0      0.19      0.15       15
319.0 4600.0 3000.0      0.14      0.15       15
319.0 4603.0 3000.0      0.49      0.41       15
319.0 4606.0 3000.0      0.56      0.50       15
319.0 4609.0 3000.0      1.59      0.77       15
319.0 4612.0 3000.0      2.04      1.72       15
319.0 4615.0 3000.0     46.24     11.93       15
319.0 4618.0 3000.0     66.96     13.21       15
319.0 4621.0 3000.0     21.45      6.19       15
319.0 4624.0 3000.0      4.06      2.13       15
319.0 4627.0 3000.0      0.78      0.95       15
```

```
319.0 4630.0 3000.0      2.07       0.59       15
319.0 4633.0 3000.0      0.57       0.37       15
319.0 4636.0 3000.0      1.91       0.61       15
319.0 4639.0 3000.0      0.85       0.85       15
319.0 4642.0 3000.0      1.49       0.77       15
319.0 4645.0 3000.0      2.69       0.77       15
319.0 4648.0 3000.0      1.29       0.56       15
319.0 4651.0 3000.0      0.74       0.43       15
319.0 4654.0 3000.0      0.73       0.41       15
```

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262.0 4576.0 3000.0      2.15     0.73     15
262.0 4579.0 3000.0      5.64     1.49     15
262.0 4582.0 3000.0     20.35     5.55     15
262.0 4585.0 3000.0      4.73     1.64     15
262.0 4588.0 3000.0      0.37     0.50     15
262.0 4591.0 3000.0      0.90     0.88     15
262.0 4594.0 3000.0      0.32     0.56     15
262.0 4597.0 3000.0      0.10     0.08     15
262.0 4600.0 3000.0      0.11     0.09     15
262.0 4603.0 3000.0      0.02     0.04     15
262.0 4606.0 3000.0      0.03     0.05     15
262.0 4609.0 3000.0      0.04     0.07     15
262.0 4612.0 3000.0      0.09     0.08     15
262.0 4615.0 3000.0      0.11     0.09     15
262.0 4618.0 3000.0      0.20     0.11     15
262.0 4621.0 3000.0      0.17     0.09     15
262.0 4624.0 3000.0      0.19     0.08     15
262.0 4627.0 3000.0      0.17     0.07     15
262.0 4630.0 3000.0      1.95     0.63     15
262.0 4633.0 3000.0      0.20     0.09     15
262.0 4636.0 3000.0      0.26     0.29     15
262.0 4639.0 3000.0      3.56     0.66     15
262.0 4642.0 3000.0      1.19     0.65     15
262.0 4645.0 3000.0      0.11     0.06     15
262.0 4648.0 3000.0      0.22     0.09     15
262.0 4651.0 3000.0      0.02     0.04     15
262.0 4654.0 3000.0      0.21     0.09     15
265.0 4576.0 3000.0      0.45     0.17     15
265.0 4579.0 3000.0      3.32     1.68     15
265.0 4582.0 3000.0      1.64     0.57     15
265.0 4585.0 3000.0      3.63     1.36     15
265.0 4588.0 3000.0      2.69     1.02     15
265.0 4591.0 3000.0      0.90     0.88     15
265.0 4594.0 3000.0      0.34     0.58     15
265.0 4597.0 3000.0      0.10     0.08     15
265.0 4600.0 3000.0      0.11     0.09     15
265.0 4603.0 3000.0      0.02     0.04     15
265.0 4606.0 3000.0      0.03     0.05     15
265.0 4609.0 3000.0      0.04     0.07     15
265.0 4612.0 3000.0      0.09     0.08     15
265.0 4615.0 3000.0      0.11     0.09     15
265.0 4618.0 3000.0      0.20     0.11     15
265.0 4621.0 3000.0      0.17     0.09     15
265.0 4624.0 3000.0      0.19     0.08     15
265.0 4627.0 3000.0      0.17     0.07     15
265.0 4630.0 3000.0      1.95     0.63     15
265.0 4633.0 3000.0      0.20     0.09     15
265.0 4636.0 3000.0      0.26     0.29     15
265.0 4639.0 3000.0      3.56     0.66     15
265.0 4642.0 3000.0      1.19     0.65     15
265.0 4645.0 3000.0      0.11     0.06     15
265.0 4648.0 3000.0      0.22     0.09     15
265.0 4651.0 3000.0      0.02     0.04     15
265.0 4654.0 3000.0      0.21     0.09     15
268.0 4576.0 3000.0      0.77     0.23     15
268.0 4579.0 3000.0      2.43     1.52     15
268.0 4582.0 3000.0      0.50     0.37     15
268.0 4585.0 3000.0      6.76     1.50     15
268.0 4588.0 3000.0      0.29     0.24     15
268.0 4591.0 3000.0      0.74     0.66     15
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268.0	4594.0	3000.0	0.53	0.63	15
268.0	4597.0	3000.0	1.08	0.26	15
268.0	4600.0	3000.0	1.11	0.27	15
268.0	4603.0	3000.0	0.02	0.04	15
268.0	4606.0	3000.0	0.06	0.06	15
268.0	4609.0	3000.0	0.05	0.07	15
268.0	4612.0	3000.0	0.09	0.08	15
268.0	4615.0	3000.0	0.11	0.09	15
268.0	4618.0	3000.0	0.23	0.11	15
268.0	4621.0	3000.0	0.17	0.09	15
268.0	4624.0	3000.0	0.19	0.08	15
268.0	4627.0	3000.0	0.17	0.07	15
268.0	4630.0	3000.0	1.95	0.63	15
268.0	4633.0	3000.0	[illegible]	0.19	15
268.0	4636.0	3000.0	0.26	0.29	15
268.0	4639.0	3000.0	3.56	0.66	15
268.0	4642.0	3000.0	2.19	0.65	15
268.0	4645.0	3000.0	0.11	0.06	15
268.0	4648.0	3000.0	0.22	0.09	15
268.0	4651.0	3000.0	0.02	0.04	15
268.0	4654.0	3000.0	0.21	0.09	15
271.0	4576.0	3000.0	0.03	0.01	15
271.0	4579.0	3000.0	0.77	0.43	15
271.0	4582.0	3000.0	0.19	0.17	15
271.0	4585.0	3000.0	0.16	0.14	15
271.0	4588.0	3000.0	0.35	0.26	15
271.0	4591.0	3000.0	1.40	0.33	15
271.0	4594.0	3000.0	0.66	0.86	15
271.0	4597.0	3000.0	2.02	0.79	15
271.0	4600.0	3000.0	0.33	0.13	15
271.0	4603.0	3000.0	0.12	0.07	15
271.0	4606.0	3000.0	0.12	0.07	15
271.0	4609.0	3000.0	0.05	0.07	15
271.0	4612.0	3000.0	0.05	0.07	15
271.0	4615.0	3000.0	0.11	0.09	15
271.0	4618.0	3000.0	0.25	0.13	15
271.0	4621.0	3000.0	0.17	0.09	15
271.0	4624.0	3000.0	0.06	0.04	15
271.0	4627.0	3000.0	1.94	0.39	15
271.0	4630.0	3000.0	0.35	0.29	15
271.0	4633.0	3000.0	0.31	0.24	15
271.0	4636.0	3000.0	2.16	0.64	15
271.0	4639.0	3000.0	0.11	0.36	15
271.0	4642.0	3000.0	0.43	0.35	15
271.0	4645.0	3000.0	0.08	0.25	15
271.0	4648.0	3000.0	1.40	0.42	15
271.0	4651.0	3000.0	0.43	0.13	15
271.0	4654.0	3000.0	0.40	0.15	15
274.0	4576.0	3000.0	0.00	0.00	15
274.0	4579.0	3000.0	0.13	0.04	15
274.0	4582.0	3000.0	1.07	0.51	15
274.0	4585.0	3000.0	0.05	0.04	15
274.0	4588.0	3000.0	3.47	0.69	15
274.0	4591.0	3000.0	0.47	0.28	15
274.0	4594.0	3000.0	0.07	0.09	15
274.0	4597.0	3000.0	1.46	1.41	15
274.0	4600.0	3000.0	0.74	1.09	15
274.0	4603.0	3000.0	0.33	0.12	15
274.0	4606.0	3000.0	0.09	0.07	15
274.0	4609.0	3000.0	0.29	0.10	15

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```
274.0 4612.0 3000.0     0.26     0.26      15
274.0 4615.0 3000.0     0.27     0.13      15
274.0 4618.0 3000.0     0.67     0.29      15
274.0 4621.0 3000.0     0.09     0.13      15
274.0 4624.0 3000.0     0.09     0.14      15
274.0 4627.0 3000.0     0.18     0.18      15
274.0 4630.0 3000.0     0.11     0.06      15
274.0 4633.0 3000.0     0.62     0.46      15
274.0 4636.0 3000.0     0.30     0.23      15
274.0 4639.0 3000.0     0.16     0.08      15
274.0 4642.0 3000.0     0.84     0.46      15
274.0 4645.0 3000.0     1.91     0.50      15
274.0 4648.0 3000.0     6.06     1.45      15
274.0 4651.0 3000.0     0.19     0.09      15
274.0 4654.0 3000.0     0.77     0.26      15
277.0 4576.0 3000.0     0.00     0.00      15
277.0 4579.0 3000.0     0.02     0.01      15
277.0 4582.0 3000.0     0.91     0.30      15
277.0 4585.0 3000.0     0.42     0.48      15
277.0 4588.0 3000.0     0.50     0.33      15
277.0 4591.0 3000.0     1.61     0.69      15
277.0 4594.0 3000.0     0.17     0.18      15
277.0 4597.0 3000.0     0.56     0.36      15
277.0 4600.0 3000.0     0.10     0.09      15
277.0 4603.0 3000.0     0.97     1.50      15
277.0 4606.0 3000.0     1.29     1.35      15
277.0 4609.0 3000.0     0.87     0.78      15
277.0 4612.0 3000.0     0.07     0.08      15
277.0 4615.0 3000.0     0.46     0.18      15
277.0 4618.0 3000.0     0.42     0.32      15
277.0 4621.0 3000.0     0.52     0.19      15
277.0 4624.0 3000.0     0.11     0.07      15
277.0 4627.0 3000.0     1.03     0.34      15
277.0 4630.0 3000.0     0.22     0.10      15
277.0 4633.0 3000.0     0.99     0.95      15
277.0 4636.0 3000.0     0.21     0.14      15
277.0 4639.0 3000.0     0.76     0.31      15
277.0 4642.0 3000.0     1.40     0.97      15
277.0 4645.0 3000.0     0.80     0.63      15
277.0 4648.0 3000.0     4.64     1.26      15
277.0 4651.0 3000.0     0.38     0.14      15
277.0 4654.0 3000.0     0.02     0.04      15
280.0 4576.0 3000.0     0.00     0.00      15
280.0 4579.0 3000.0     0.01     0.00      15
280.0 4582.0 3000.0     0.77     0.29      15
280.0 4585.0 3000.0     0.56     0.50      15
280.0 4588.0 3000.0     0.13     0.07      15
280.0 4591.0 3000.0     2.01     0.49      15
280.0 4594.0 3000.0     0.32     0.36      15
280.0 4597.0 3000.0     0.29     0.24      15
280.0 4600.0 3000.0     0.15     0.09      15
280.0 4603.0 3000.0     0.16     0.09      15
280.0 4606.0 3000.0     0.16     0.16      15
280.0 4609.0 3000.0     0.70     0.91      15
280.0 4612.0 3000.0     0.89     1.13      15
280.0 4615.0 3000.0     1.27     0.42      15
280.0 4618.0 3000.0     2.87     0.99      15
280.0 4621.0 3000.0     0.35     0.15      15
280.0 4624.0 3000.0     0.21     0.12      15
280.0 4627.0 3000.0     1.08     0.23      15
```

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280.0 4630.0 3000.0       0.75       0.24       15
280.0 4633.0 3000.0       2.14       1.17       15
280.0 4636.0 3000.0       1.07       0.24       15
280.0 4639.0 3000.0       1.25       0.42       15
280.0 4642.0 3000.0       0.53       0.32       15
280.0 4645.0 3000.0       3.71       0.97       15
280.0 4648.0 3000.0       2.10       1.02       15
280.0 4651.0 3000.0       1.42       0.34       15
280.0 4654.0 3000.0       1.02       0.04       15
283.0 4576.0 3000.0       0.00       0.00       15
283.0 4579.0 3000.0       0.00       0.00       15
283.0 4582.0 3000.0       0.18       0.10       15
283.0 4585.0 3000.0       0.54       0.58       15
283.0 4588.0 3000.0       0.18       0.14       15
283.0 4591.0 3000.0       0.06       0.10       15
283.0 4594.0 3000.0       0.40       0.35       15
283.0 4597.0 3000.0       0.28       0.23       15
283.0 4600.0 3000.0       0.13       0.07       15
283.0 4603.0 3000.0       0.11       0.07       15
283.0 4606.0 3000.0       0.17       0.14       15
283.0 4609.0 3000.0       0.05       0.07       15
283.0 4612.0 3000.0       1.62       1.34       15
283.0 4615.0 3000.0       3.88       1.69       15
283.0 4618.0 3000.0       9.56       2.11       15
283.0 4621.0 3000.0       0.72       0.24       15
283.0 4624.0 3000.0       0.50       0.15       15
283.0 4627.0 3000.0       0.28       0.13       15
283.0 4630.0 3000.0       0.15       0.16       15
283.0 4633.0 3000.0       2.96       1.38       15
283.0 4636.0 3000.0       1.66       0.44       15
283.0 4639.0 3000.0       0.72       0.44       15
283.0 4642.0 3000.0       0.08       0.06       15
283.0 4645.0 3000.0       0.13       0.08       15
283.0 4648.0 3000.0       0.79       0.59       15
283.0 4651.0 3000.0       0.86       0.52       15
283.0 4654.0 3000.0       1.06       0.59       15
286.0 4576.0 3000.0       0.00       0.00       15
286.0 4579.0 3000.0       0.00       0.00       15
286.0 4582.0 3000.0       0.93       0.32       15
286.0 4585.0 3000.0       1.00       0.73       15
286.0 4588.0 3000.0       1.38       0.48       15
286.0 4591.0 3000.0       0.25       0.16       15
286.0 4594.0 3000.0       2.74       0.92       15
286.0 4597.0 3000.0       0.75       0.77       15
286.0 4600.0 3000.0       0.86       0.28       15
286.0 4603.0 3000.0       0.79       0.28       15
286.0 4606.0 3000.0       0.18       0.11       15
286.0 4609.0 3000.0       0.20       0.18       15
286.0 4612.0 3000.0       2.32       1.63       15
286.0 4615.0 3000.0      10.43       3.86       15
286.0 4618.0 3000.0      18.49       5.75       15
286.0 4621.0 3000.0       9.75       2.25       15
286.0 4624.0 3000.0       0.97       0.56       15
286.0 4627.0 3000.0       2.80       1.00       15
286.0 4630.0 3000.0       3.97       0.94       15
286.0 4633.0 3000.0       1.71       1.04       15
286.0 4636.0 3000.0       4.64       1.75       15
286.0 4639.0 3000.0       2.77       1.11       15
286.0 4642.0 3000.0       0.74       0.44       15
286.0 4645.0 3000.0       0.72       0.69       15
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286.0 4648.0 3000.0     3.41     1.05     15
286.0 4651.0 3000.0    15.17     3.87     15
286.0 4654.0 3000.0    10.88     3.01     15
289.0 4576.0 3000.0     0.00     0.00     15
289.0 4579.0 3000.0     0.00     0.00     15
289.0 4582.0 3000.0     7.52     1.17     15
289.0 4585.0 3000.0     1.45     0.51     15
289.0 4588.0 3000.0     4.94     1.93     15
289.0 4591.0 3000.0     7.55     2.08     15
289.0 4594.0 3000.0     3.18     1.07     15
289.0 4597.0 3000.0     0.21     0.16     15
289.0 4600.0 3000.0     0.36     0.24     15
289.0 4603.0 3000.0     0.59     0.37     15
289.0 4606.0 3000.0     0.96     0.91     15
289.0 4609.0 3000.0     3.67     0.95     15
289.0 4612.0 3000.0     2.96     0.87     15
289.0 4615.0 3000.0    15.60     5.32     15
289.0 4618.0 3000.0    28.35     8.53     15
289.0 4621.0 3000.0    11.00     3.53     15
289.0 4624.0 3000.0     1.82     0.73     15
289.0 4627.0 3000.0     1.32     1.07     15
289.0 4630.0 3000.0     7.48     1.22     15
289.0 4633.0 3000.0     5.37     1.72     15
289.0 4636.0 3000.0     4.17     2.00     15
289.0 4639.0 3000.0     3.29     1.42     15
289.0 4642.0 3000.0     6.55     1.87     15
289.0 4645.0 3000.0     0.48     0.45     15
289.0 4648.0 3000.0     1.98     1.45     15
289.0 4651.0 3000.0    29.28     8.27     15
289.0 4654.0 3000.0     2.32     1.92     15
292.0 4576.0 3000.0     0.00     0.00     15
292.0 4579.0 3000.0     0.09     0.02     15
292.0 4582.0 3000.0     1.30     0.78     15
292.0 4585.0 3000.0     4.41     1.97     15
292.0 4588.0 3000.0     4.31     2.84     15
292.0 4591.0 3000.0     1.73     1.81     15
292.0 4594.0 3000.0     2.63     2.13     15
292.0 4597.0 3000.0     0.69     1.10     15
292.0 4600.0 3000.0     3.81     2.21     15
292.0 4603.0 3000.0     8.48     3.49     15
292.0 4606.0 3000.0     2.75     1.41     15
292.0 4609.0 3000.0    21.38     6.55     15
292.0 4612.0 3000.0     6.64     3.67     15
292.0 4615.0 3000.0     3.39     1.05     15
292.0 4618.0 3000.0     7.19     4.64     15
292.0 4621.0 3000.0    16.84     6.64     15
292.0 4624.0 3000.0     7.60     4.00     15
292.0 4627.0 3000.0    15.41     5.15     15
292.0 4630.0 3000.0     7.80     3.46     15
292.0 4633.0 3000.0    15.16     5.11     15
292.0 4636.0 3000.0    21.08     5.88     15
292.0 4639.0 3000.0     2.49     1.38     15
292.0 4642.0 3000.0    16.30     3.83     15
292.0 4645.0 3000.0     3.91     1.55     15
292.0 4648.0 3000.0     3.67     2.22     15
292.0 4651.0 3000.0    32.86     9.74     15
292.0 4654.0 3000.0    22.30     7.15     15
295.0 4576.0 3000.0     0.00     0.00     15
295.0 4579.0 3000.0     0.00     0.00     15
295.0 4582.0 3000.0     0.00     0.00     15
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295.0 4585.0 3000.0     0.00     0.00      15
295.0 4588.0 3000.0     0.08     0.02      15
295.0 4591.0 3000.0     0.95     0.50      15
295.0 4594.0 3000.0     3.13     1.12      15
295.0 4597.0 3000.0     5.71     1.64      15
295.0 4600.0 3000.0     3.56     1.62      15
295.0 4603.0 3000.0     3.61     1.34      15
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295.0 4609.0 3000.0     5.30     1.98      15
295.0 4612.0 3000.0     4.94     1.74      15
295.0 4615.0 3000.0     5.92     3.20      15
295.0 4618.0 3000.0    17.01     7.29      15
295.0 4621.0 3000.0    32.84     9.73      15
295.0 4624.0 3000.0    25.43     9.49      15
295.0 4627.0 3000.0    50.49    16.62      15
295.0 4630.0 3000.0    55.82    17.90      15
295.0 4633.0 3000.0    40.33    16.63      15
295.0 4636.0 3000.0    15.72     6.54      15
295.0 4639.0 3000.0     1.34     1.20      15
295.0 4642.0 3000.0     2.46     1.57      15
295.0 4645.0 3000.0     8.87     3.36      15
295.0 4648.0 3000.0     7.47     3.05      15
295.0 4651.0 3000.0     1.90     1.42      15
295.0 4654.0 3000.0     4.68     2.09      15
298.0 4576.0 3000.0     0.00     0.00      15
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298.0 4582.0 3000.0     0.00     0.00      15
298.0 4585.0 3000.0     0.00     0.00      15
298.0 4588.0 3000.0     0.00     0.00      15
298.0 4591.0 3000.0     1.13     0.35      15
298.0 4594.0 3000.0     0.71     0.26      15
298.0 4597.0 3000.0     1.36     0.52      15
298.0 4600.0 3000.0     0.36     0.12      15
298.0 4603.0 3000.0     0.00     0.00      15
298.0 4606.0 3000.0     1.63     0.39      15
298.0 4609.0 3000.0     4.12     1.00      15
298.0 4612.0 3000.0     0.34     0.15      15
298.0 4615.0 3000.0     2.11     1.30      15
298.0 4618.0 3000.0    12.33     6.38      15
298.0 4621.0 3000.0    15.07     7.55      15
298.0 4624.0 3000.0    44.78    12.02      15
298.0 4627.0 3000.0    60.24    19.49      15
298.0 4630.0 3000.0    68.74    20.96      15
298.0 4633.0 3000.0    71.41    21.67      15
298.0 4636.0 3000.0    46.19    15.27      15
298.0 4639.0 3000.0    32.28     8.57      15
298.0 4642.0 3000.0    14.60     4.22      15
298.0 4645.0 3000.0     5.26     2.45      15
298.0 4648.0 3000.0     1.66     1.12      15
298.0 4651.0 3000.0     1.90     0.30      15
298.0 4654.0 3000.0     1.32     0.90      15
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301.0 4579.0 3000.0     0.00     0.00      15
301.0 4582.0 3000.0     0.00     0.00      15
301.0 4585.0 3000.0     0.00     0.00      15
301.0 4588.0 3000.0     0.00     0.00      15
301.0 4591.0 3000.0     9.35     1.36      15
301.0 4594.0 3000.0     7.98     1.20      15
301.0 4597.0 3000.0     4.60     1.36      15
301.0 4600.0 3000.0     0.57     0.22      15
```

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301.0 4603.0 3000.0     0.36     0.14     15
301.0 4606.0 3000.0     0.74     0.07     15
301.0 4609.0 3000.0     0.50     0.00     15
301.0 4612.0 3000.0     0.02     0.01     15
301.0 4615.0 3000.0     2.70     1.62     15
301.0 4618.0 3000.0     4.96     3.93     15
301.0 4621.0 3000.0     5.14     1.38     15
301.0 4624.0 3000.0    17.45     4.15     15
301.0 4627.0 3000.0    29.18     5.78     15
301.0 4630.0 3000.0    26.33     8.45     15
301.0 4633.0 3000.0    51.50    15.73     15
301.0 4636.0 3000.0    62.14    17.43     15
301.0 4639.0 3000.0    59.91    15.31     15
301.0 4642.0 3000.0     8.14     2.76     15
301.0 4645.0 3000.0     4.40     1.52     15
301.0 4648.0 3000.0     1.74     0.96     15
301.0 4651.0 3000.0     0.54     0.57     15
301.0 4654.0 3000.0     0.47     0.55     15
304.0 4576.0 3000.0     0.00     0.00     15
304.0 4579.0 3000.0     0.00     0.00     15
304.0 4582.0 3000.0     0.00     0.00     15
304.0 4585.0 3000.0     0.00     0.00     15
304.0 4588.0 3000.0     0.00     0.00     15
304.0 4591.0 3000.0     1.36     1.39     15
304.0 4594.0 3000.0     2.69     2.48     15
304.0 4597.0 3000.0     6.86     1.80     15
304.0 4600.0 3000.0     7.09     0.73     15
304.0 4603.0 3000.0     5.81     0.53     15
304.0 4606.0 3000.0     1.17     0.35     15
304.0 4609.0 3000.0     0.10     0.03     15
304.0 4612.0 3000.0     2.92     0.29     15
304.0 4615.0 3000.0     4.28     0.44     15
304.0 4618.0 3000.0     3.68     0.36     15
304.0 4621.0 3000.0     6.67     1.49     15
304.0 4624.0 3000.0    12.23     5.30     15
304.0 4627.0 3000.0     9.06     4.18     15
304.0 4630.0 3000.0    22.75     5.76     15
304.0 4633.0 3000.0    24.21     7.12     15
304.0 4636.0 3000.0    18.77     7.45     15
304.0 4639.0 3000.0    18.19     6.64     15
304.0 4642.0 3000.0     2.84     1.58     15
304.0 4645.0 3000.0     2.05     1.15     15
304.0 4648.0 3000.0    11.55     3.33     15
304.0 4651.0 3000.0    12.73     3.44     15
304.0 4654.0 3000.0     1.76     0.88     15
307.0 4576.0 3000.0     0.00     0.00     15
307.0 4579.0 3000.0     0.00     0.00     15
307.0 4582.0 3000.0     0.00     0.00     15
307.0 4585.0 3000.0     0.00     0.00     15
307.0 4588.0 3000.0     0.00     0.00     15
307.0 4591.0 3000.0     5.30     1.76     15
307.0 4594.0 3000.0    13.98     3.83     15
307.0 4597.0 3000.0    12.66     5.10     15
307.0 4600.0 3000.0     4.44     1.93     15
307.0 4603.0 3000.0    13.77     2.69     15
307.0 4606.0 3000.0     8.76     0.67     15
307.0 4609.0 3000.0     7.13     0.66     15
307.0 4612.0 3000.0     0.19     0.08     15
307.0 4615.0 3000.0     1.53     1.45     15
307.0 4618.0 3000.0     1.47     0.53     15
```

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307.0 4621.0 3000.0    7.93    2.36    15
307.0 4624.0 3000.0    2.30    1.00    15
307.0 4627.0 3000.0    4.55    1.58    15
307.0 4630.0 3000.0    0.99    0.96    15
307.0 4633.0 3000.0    1.33    0.97    15
307.0 4636.0 3000.0    0.82    0.78    15
307.0 4639.0 3000.0    3.49    1.59    15
307.0 4642.0 3000.0    7.06    2.42    15
307.0 4645.0 3000.0   13.73    3.39    15
307.0 4648.0 3000.0   11.59    3.02    15
307.0 4651.0 3000.0   11.47    2.95    15
307.0 4654.0 3000.0    2.19    1.29    15
310.0 4576.0 3000.0    0.00    0.00    15
310.0 4579.0 3000.0    0.00    0.00    15
310.0 4582.0 3000.0    0.00    0.00    15
310.0 4585.0 3000.0    0.00    0.00    15
310.0 4588.0 3000.0    0.00    0.00    15
310.0 4591.0 3000.0    0.33    0.07    15
310.0 4594.0 3000.0    1.49    0.53    15
310.0 4597.0 3000.0    1.50    0.60    15
310.0 4600.0 3000.0    0.94    0.89    15
310.0 4603.0 3000.0    3.97    1.75    15
310.0 4606.0 3000.0    3.48    2.45    15
310.0 4609.0 3000.0   20.36    5.42    15
310.0 4612.0 3000.0    4.02    1.59    15
310.0 4615.0 3000.0   22.53    5.98    15
310.0 4618.0 3000.0    8.00    3.40    15
310.0 4621.0 3000.0   14.27    4.13    15
310.0 4624.0 3000.0    2.51    1.03    15
310.0 4627.0 3000.0    0.17    0.30    15
310.0 4630.0 3000.0    0.48    0.34    15
310.0 4633.0 3000.0    0.41    0.34    15
310.0 4636.0 3000.0    0.33    0.31    15
310.0 4639.0 3000.0    0.43    0.34    15
310.0 4642.0 3000.0    6.81    2.28    15
310.0 4645.0 3000.0   28.44    6.22    15
310.0 4648.0 3000.0    1.45    1.09    15
310.0 4651.0 3000.0    1.36    0.64    15
310.0 4654.0 3000.0    1.08    1.33    15
313.0 4576.0 3000.0    0.00    0.00    15
313.0 4579.0 3000.0    0.00    0.00    15
313.0 4582.0 3000.0    0.00    0.00    15
313.0 4585.0 3000.0    0.00    0.00    15
313.0 4588.0 3000.0    0.00    0.00    15
313.0 4591.0 3000.0    0.00    0.00    15
313.0 4594.0 3000.0    0.01    0.00    15
313.0 4597.0 3000.0    0.42    0.15    15
313.0 4600.0 3000.0    0.47    0.18    15
313.0 4603.0 3000.0    0.44    0.16    15
313.0 4606.0 3000.0    0.51    0.16    15
313.0 4609.0 3000.0    9.30    3.43    15
313.0 4612.0 3000.0    2.46    0.83    15
313.0 4615.0 3000.0    1.88    0.21    15
313.0 4618.0 3000.0    1.18    0.50    15
313.0 4621.0 3000.0    1.52    0.89    15
313.0 4624.0 3000.0    3.19    1.23    15
313.0 4627.0 3000.0    0.66    0.46    15
313.0 4630.0 3000.0    0.88    0.45    15
313.0 4633.0 3000.0    2.75    0.78    15
313.0 4636.0 3000.0    0.70    0.41    15
```

```
313.0 4639.0 3000.0      0.96      0.48      15
313.0 4642.0 3000.0      1.88      1.25      15
313.0 4645.0 3000.0      2.38      1.10      15
313.0 4648.0 3000.0      0.78      0.41      15
313.0 4651.0 3000.0      0.34      0.43      15
313.0 4654.0 3000.0      4.49      1.24      15
316.0 4576.0 3000.0      0.00      0.00      15
316.0 4579.0 3000.0      0.00      0.00      15
316.0 4582.0 3000.0      0.00      0.00      15
316.0 4585.0 3000.0      0.00      0.00      15
316.0 4588.0 3000.0      0.00      0.00      15
316.0 4591.0 3000.0      0.59      0.22      15
316.0 4594.0 3000.0      0.79      0.29      15
316.0 4597.0 3000.0      0.53      0.34      15
316.0 4600.0 3000.0      0.28      0.18      15
316.0 4603.0 3000.0      0.85      0.46      15
316.0 4606.0 3000.0      1.23      0.64      15
316.0 4609.0 3000.0      0.92      0.49      15
316.0 4612.0 3000.0      4.57      3.25      15
316.0 4615.0 3000.0     40.33      7.60      15
316.0 4618.0 3000.0     29.65      5.59      15
316.0 4621.0 3000.0      9.78      3.17      15
316.0 4624.0 3000.0      1.77      0.99      15
316.0 4627.0 3000.0      1.71      0.76      15
316.0 4630.0 3000.0      0.27      0.26      15
316.0 4633.0 3000.0      0.74      0.40      15
316.0 4636.0 3000.0      0.77      0.40      15
316.0 4639.0 3000.0      0.90      0.60      15
316.0 4642.0 3000.0      0.55      0.41      15
316.0 4645.0 3000.0      6.75      1.53      15
316.0 4648.0 3000.0      3.16      0.34      15
316.0 4651.0 3000.0      3.35      0.94      15
316.0 4654.0 3000.0     20.27      4.05      15
319.0 4576.0 3000.0      0.00      0.00      15
319.0 4579.0 3000.0      0.00      0.00      15
319.0 4582.0 3000.0      0.00      0.00      15
319.0 4585.0 3000.0      0.00      0.00      15
319.0 4588.0 3000.0      0.00      0.00      15
319.0 4591.0 3000.0      0.20      0.06      15
319.0 4594.0 3000.0      0.56      0.22      15
319.0 4597.0 3000.0      0.25      0.15      15
319.0 4600.0 3000.0      0.15      0.13      15
319.0 4603.0 3000.0      0.54      0.33      15
319.0 4606.0 3000.0      0.61      0.45      15
319.0 4609.0 3000.0      1.73      0.75      15
319.0 4612.0 3000.0      2.13      1.54      15
319.0 4615.0 3000.0     44.58     11.46      15
319.0 4618.0 3000.0     60.32     12.61      15
319.0 4621.0 3000.0     20.88      5.97      15
319.0 4624.0 3000.0      4.14      2.01      15
319.0 4627.0 3000.0      0.77      0.66      15
319.0 4630.0 3000.0      1.03      0.55      15
319.0 4633.0 3000.0      0.65      0.35      15
319.0 4636.0 3000.0      1.96      0.60      15
319.0 4639.0 3000.0      0.96      0.78      15
319.0 4642.0 3000.0      1.51      0.79      15
319.0 4645.0 3000.0      2.73      0.75      15
319.0 4648.0 3000.0      1.47      0.57      15
319.0 4651.0 3000.0      0.93      0.43      15
319.0 4654.0 3000.0      0.83      0.41      15
```

4. Future 2.2 Percent Strategy Inventories

a. 1978

```
262.0 4576.0 3000.0     1.83      0.60       15
262.0 4579.0 3000.0     9.49      1.46       15
262.0 4582.0 3000.0    32.81      5.44       15
262.0 4585.0 3000.0     7.31      1.76       15
262.0 4588.0 3000.0     0.35      0.70       15
262.0 4591.0 3000.0     1.19      1.21       15
262.0 4594.0 3000.0     0.29      0.81       15
262.0 4597.0 3000.0     0.10      0.11       15
262.0 4600.0 3000.0     0.09      0.11       15
262.0 4603.0 3000.0     0.02      0.06       15
262.0 4606.0 3000.0     0.02      0.07       15
262.0 4609.0 3000.0     0.04      0.10       15
262.0 4612.0 3000.0     0.11      0.11       15
262.0 4615.0 3000.0     0.09      0.11       15
262.0 4618.0 3000.0     0.17      0.14       15
262.0 4621.0 3000.0     0.15      0.11       15
262.0 4624.0 3000.0     0.21      0.09       15
262.0 4627.0 3000.0     0.19      0.08       15
262.0 4630.0 3000.0     3.55      0.73       15
262.0 4633.0 3000.0     0.18      0.09       15
262.0 4636.0 3000.0     0.24      0.39       15
262.0 4639.0 3000.0     7.44      0.67       15
262.0 4642.0 3000.0     4.30      0.77       15
262.0 4645.0 3000.0     0.13      0.07       15
262.0 4648.0 3000.0     0.26      0.10       15
262.0 4651.0 3000.0     0.02      0.05       15
262.0 4654.0 3000.0     0.18      0.10       15
265.0 4576.0 3000.0     0.58      0.18       15
265.0 4579.0 3000.0     4.02      1.93       15
265.0 4582.0 3000.0     2.88      0.66       15
265.0 4585.0 3000.0     6.60      1.57       15
265.0 4588.0 3000.0     4.28      1.23       15
265.0 4591.0 3000.0     1.19      1.21       15
265.0 4594.0 3000.0     0.36      0.83       15
265.0 4597.0 3000.0     0.10      0.11       15
265.0 4600.0 3000.0     0.09      0.11       15
265.0 4603.0 3000.0     0.02      0.06       15
265.0 4606.0 3000.0     0.02      0.07       15
265.0 4609.0 3000.0     0.04      0.10       15
265.0 4612.0 3000.0     0.11      0.11       15
265.0 4615.0 3000.0     0.09      0.11       15
265.0 4618.0 3000.0     0.17      0.14       15
265.0 4621.0 3000.0     0.15      0.11       15
265.0 4624.0 3000.0     0.21      0.09       15
265.0 4627.0 3000.0     0.19      0.08       15
265.0 4630.0 3000.0     3.55      0.73       15
265.0 4633.0 3000.0     0.18      0.09       15
265.0 4636.0 3000.0     0.24      0.39       15
265.0 4639.0 3000.0     7.44      0.67       15
265.0 4642.0 3000.0     4.30      0.77       15
265.0 4645.0 3000.0     0.13      0.07       15
265.0 4648.0 3000.0     0.26      0.10       15
265.0 4651.0 3000.0     0.02      0.05       15
265.0 4654.0 3000.0     0.18      0.10       15
268.0 4576.0 3000.0     0.60      0.13       15
268.0 4579.0 3000.0     2.36      1.30       15
268.0 4582.0 3000.0     0.38      0.45       15
268.0 4585.0 3000.0    13.47      1.63       15
268.0 4588.0 3000.0     0.30      0.33       15
```

```
268.0 4591.0 3000.0        0.06       0.00       15
268.0 4594.0 3000.0        0.31       0.27       15
268.0 4597.0 3000.0        2.08       0.29       15
268.0 4600.0 3000.0        2.08       0.29       15
268.0 4603.0 3000.0        0.02       0.06       15
268.0 4606.0 3000.0        0.05       0.07       15
268.0 4609.0 3000.0        0.05       0.10       15
268.0 4612.0 3000.0        0.11       0.11       15
268.0 4615.0 3000.0        0.09       0.11       15
268.0 4618.0 3000.0        0.17       0.14       15
268.0 4621.0 3000.0        0.15       0.11       15
268.0 4624.0 3000.0        0.21       0.05       15
268.0 4627.0 3000.0        0.19       0.07       15
268.0 4630.0 3000.0        1.55       0.73       15
268.0 4633.0 3000.0        0.18       0.05       15
268.0 4636.0 3000.0        0.24       0.39       15
268.0 4639.0 3000.0        7.44       0.67       15
268.0 4642.0 3000.0        4.30       0.77       15
268.0 4645.0 3000.0        0.13       0.27       15
268.0 4648.0 3000.0        0.26       0.10       15
268.0 4651.0 3000.0        0.02       0.05       15
268.0 4654.0 3000.0        0.13       0.10       15
271.0 4576.0 3000.0        0.23       0.01       15
271.0 4579.0 3000.0        0.74       0.00       15
271.0 4582.0 3000.0        0.17       0.22       15
271.0 4585.0 3000.0        0.14       0.12       15
271.0 4588.0 3000.0        0.32       0.34       15
271.0 4591.0 3000.0        2.65       0.25       15
271.0 4594.0 3000.0        0.71       1.21       15
271.0 4597.0 3000.0        3.35       0.96       15
271.0 4600.0 3000.0        0.48       [illegible] 15
271.0 4603.0 3000.0        0.18       0.08       15
271.0 4606.0 3000.0        0.09       0.09       15
271.0 4609.0 3000.0        0.04       0.10       15
271.0 4612.0 3000.0        0.04       0.10       15
271.0 4615.0 3000.0        0.09       0.11       15
271.0 4618.0 3000.0        0.21       0.15       15
271.0 4621.0 3000.0        0.15       0.11       15
271.0 4624.0 3000.0        0.05       0.06       15
271.0 4627.0 3000.0        3.84       0.40       15
271.0 4630.0 3000.0        0.35       0.38       15
271.0 4633.0 3000.0        0.28       0.31       15
271.0 4636.0 3000.0        4.19       0.75       15
271.0 4639.0 3000.0        [illegible] 0.17      15
271.0 4642.0 3000.0        0.53       0.47       15
271.0 4645.0 3000.0        0.07       0.07       15
271.0 4648.0 3000.0        2.43       0.47       15
271.0 4651.0 3000.0        0.73       0.13       15
271.0 4654.0 3000.0        0.13       0.14       15
274.0 4576.0 3000.0        [illegible] 0.00      15
274.0 4579.0 3000.0        0.12       0.03       15
274.0 4582.0 3000.0        1.55       0.72       15
274.0 4585.0 3000.0        0.04       0.05       15
274.0 4588.0 3000.0        6.05       0.51       15
274.0 4591.0 3000.0        0.67       0.37       15
274.0 4594.0 3000.0        0.06       0.11       15
274.0 4597.0 3000.0        1.62       1.30       15
274.0 4600.0 3000.0        0.73       1.40       15
274.0 4603.0 3000.0        0.46       0.13       15
```

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```
274.0 4606.0 3000.0      0.07      0.08       15
274.0 4609.0 3000.0      0.08      0.14       15
274.0 4612.0 3000.0      0.35      0.26       15
274.0 4615.0 3000.0      0.23      0.15       15
274.0 4618.0 3000.0      0.71      0.32       15
274.0 4621.0 3000.0      0.08      0.18       15
274.0 4624.0 3000.0      0.08      0.20       15
274.0 4627.0 3000.0      0.16      0.24       15
274.0 4630.0 3000.0      0.10      0.07       15
274.0 4633.0 3000.0      0.74      0.60       15
274.0 4636.0 3000.0      0.42      0.30       15
274.0 4639.0 3000.0      0.14      0.09       15
274.0 4642.0 3000.0      0.74      0.58       15
274.0 4645.0 3000.0      2.67      0.50       15
274.0 4648.0 3000.0     10.91      1.49       15
274.0 4651.0 3000.0      0.16      0.09       15
274.0 4654.0 3000.0      0.65      0.24       15
277.0 4576.0 3000.0      0.00      0.00       15
277.0 4579.0 3000.0      0.02      0.01       15
277.0 4582.0 3000.0      1.31      0.32       15
277.0 4585.0 3000.0      0.40      0.66       15
277.0 4588.0 3000.0      0.53      0.40       15
277.0 4591.0 3000.0      2.66      0.84       15
277.0 4594.0 3000.0      0.15      0.24       15
277.0 4597.0 3000.0      0.79      0.45       15
277.0 4600.0 3000.0      0.08      0.12       15
277.0 4603.0 3000.0      0.99      2.13       15
277.0 4606.0 3000.0      1.37      1.33       15
277.0 4609.0 3000.0      1.19      1.06       15
277.0 4612.0 3000.0      0.06      0.10       15
277.0 4615.0 3000.0      0.49      0.19       15
277.0 4618.0 3000.0      0.36      0.43       15
277.0 4621.0 3000.0      0.60      0.20       15
277.0 4624.0 3000.0      0.10      0.08       15
277.0 4627.0 3000.0      1.58      0.37       15
277.0 4630.0 3000.0      0.20      0.11       15
277.0 4633.0 3000.0      1.04      1.28       15
277.0 4636.0 3000.0      0.19      0.17       15
277.0 4639.0 3000.0      0.78      0.33       15
277.0 4642.0 3000.0      1.72      1.26       15
277.0 4645.0 3000.0      1.02      0.84       15
277.0 4648.0 3000.0      7.35      1.28       15
277.0 4651.0 3000.0      0.35      0.14       15
277.0 4654.0 3000.0      0.02      0.05       15
280.0 4576.0 3000.0      0.00      0.00       15
280.0 4579.0 3000.0      0.01      0.00       15
280.0 4582.0 3000.0      0.72      0.30       15
280.0 4585.0 3000.0      0.63      0.66       15
280.0 4588.0 3000.0      0.15      0.09       15
280.0 4591.0 3000.0      3.77      0.52       15
280.0 4594.0 3000.0      0.28      0.48       15
280.0 4597.0 3000.0      0.22      0.29       15
280.0 4600.0 3000.0      0.16      0.11       15
280.0 4603.0 3000.0      0.16      0.10       15
280.0 4606.0 3000.0      0.17      0.21       15
280.0 4609.0 3000.0      0.69      1.26       15
280.0 4612.0 3000.0      0.90      1.57       15
280.0 4615.0 3000.0      1.05      0.39       15
280.0 4618.0 3000.0      3.54      1.03       15
```

```
280.0 4621.0 3000.0     0.30     0.16      15
280.0 4624.0 3000.0     0.19     0.11      15
280.0 4627.0 3000.0     2.09     0.23      15
280.0 4630.0 3000.0     0.63     0.24      15
280.0 4633.0 3000.0     3.27     1.49      15
280.0 4636.0 3000.0     2.05     0.25      15
280.0 4639.0 3000.0     2.31     0.50      15
280.0 4642.0 3000.0     0.58     0.39      15
280.0 4645.0 3000.0     6.77     1.05      15
280.0 4648.0 3000.0     3.07     1.25      15
280.0 4651.0 3000.0     2.33     0.33      15
280.0 4654.0 3000.0     0.02     0.05      15
283.0 4576.0 3000.0     0.00     0.00      15
283.0 4579.0 3000.0     0.00     0.00      15
283.0 4582.0 3000.0     0.15     0.12      15
283.0 4585.0 3000.0     0.59     0.80      15
283.0 4588.0 3000.0     0.15     0.17      15
283.0 4591.0 3000.0     0.05     0.14      15
283.0 4594.0 3000.0     0.46     0.47      15
283.0 4597.0 3000.0     0.26     0.29      15
283.0 4600.0 3000.0     0.09     0.03      15
283.0 4603.0 3000.0     0.00     0.02      15
283.0 4606.0 3000.0     0.13     0.13      15
283.0 4609.0 3000.0     0.05     0.10      15
283.0 4612.0 3000.0     1.59     1.74      15
283.0 4615.0 3000.0     5.35     1.98      15
283.0 4618.0 3000.0    17.92     2.15      15
283.0 4621.0 3000.0     0.83     0.24      15
283.0 4624.0 3000.0     0.71     0.15      15
283.0 4627.0 3000.0     0.48     0.13      15
283.0 4630.0 3000.0     0.16     0.21      15
283.0 4633.0 3000.0     5.06     1.75      15
283.0 4636.0 3000.0     2.59     0.45      15
283.0 4639.0 3000.0     0.66     0.54      15
283.0 4642.0 3000.0     0.07     0.06      15
283.0 4645.0 3000.0     0.12     0.10      15
283.0 4648.0 3000.0     0.66     0.77      15
283.0 4651.0 3000.0     0.87     0.66      15
283.0 4654.0 3000.0     0.94     0.70      15
286.0 4576.0 3000.0     0.00     0.00      15
286.0 4579.0 3000.0     0.00     0.00      15
286.0 4582.0 3000.0     0.84     0.30      15
286.0 4585.0 3000.0     0.86     0.92      15
286.0 4588.0 3000.0     2.41     0.56      15
286.0 4591.0 3000.0     0.23     0.19      15
286.0 4594.0 3000.0     4.76     1.04      15
286.0 4597.0 3000.0     0.95     0.27      15
286.0 4600.0 3000.0     1.47     0.31      15
286.0 4603.0 3000.0     1.14     0.30      15
286.0 4606.0 3000.0     0.19     0.13      15
286.0 4609.0 3000.0     0.17     0.24      15
286.0 4612.0 3000.0     3.55     2.17      15
286.0 4615.0 3000.0    15.02     4.31      15
286.0 4618.0 3000.0    32.15     5.71      15
286.0 4621.0 3000.0    17.19     2.25      15
286.0 4624.0 3000.0     1.15     0.69      15
286.0 4627.0 3000.0     3.54     1.07      15
286.0 4630.0 3000.0     7.64     0.89      15
286.0 4633.0 3000.0     2.04     1.29      15
```

```
286.0 4636.0 3000.0    4.41    1.73    15
286.0 4639.0 3000.0    2.64    1.22    15
286.0 4642.0 3000.0    0.85    0.53    15
286.0 4645.0 3000.0    0.77    0.94    15
286.0 4648.0 3000.0    6.33    1.24    15
286.0 4651.0 3000.0   23.50    4.36    15
286.0 4654.0 3000.0   22.17    3.54    15
289.0 4576.0 3000.0    0.00    0.00    15
289.0 4579.0 3000.0    0.00    0.00    15
289.0 4582.0 3000.0    2.19    1.20    15
289.0 4585.0 3000.0    1.03    0.43    15
289.0 4588.0 3000.0    6.13    2.08    15
289.0 4591.0 3000.0   13.03    2.21    15
289.0 4594.0 3000.0    5.29    1.20    15
289.0 4597.0 3000.0    0.16    0.19    15
289.0 4600.0 3000.0    0.26    0.28    15
289.0 4603.0 3000.0    0.76    0.45    15
289.0 4606.0 3000.0    1.02    1.22    15
289.0 4609.0 3000.0    6.73    1.02    15
289.0 4612.0 3000.0    4.85    0.93    15
289.0 4615.0 3000.0   23.77    5.82    15
289.0 4618.0 3000.0   45.95    9.09    15
289.0 4621.0 3000.0   16.93    3.30    15
289.0 4624.0 3000.0    0.89    0.91    15
289.0 4627.0 3000.0    1.17    1.37    15
289.0 4630.0 3000.0    4.23    1.56    15
289.0 4633.0 3000.0   10.29    2.04    15
289.0 4636.0 3000.0    6.64    2.48    15
289.0 4639.0 3000.0    3.94    1.55    15
289.0 4642.0 3000.0   12.26    2.12    15
289.0 4645.0 3000.0    0.44    0.60    15
289.0 4648.0 3000.0    2.36    1.90    15
289.0 4651.0 3000.0   45.81    8.36    15
289.0 4654.0 3000.0    3.17    2.69    15
292.0 4576.0 3000.0    0.00    0.00    15
292.0 4579.0 3000.0    0.15    0.02    15
292.0 4582.0 3000.0    1.13    0.90    15
292.0 4585.0 3000.0    6.69    2.21    15
292.0 4588.0 3000.0    5.57    3.60    15
292.0 4591.0 3000.0    1.98    2.48    15
292.0 4594.0 3000.0    3.50    2.34    15
292.0 4597.0 3000.0    0.61    1.55    15
292.0 4600.0 3000.0    5.53    2.78    15
292.0 4603.0 3000.0   12.19    4.22    15
292.0 4606.0 3000.0    3.47    1.65    15
292.0 4609.0 3000.0   36.40    7.14    15
292.0 4612.0 3000.0    8.97    4.56    15
292.0 4615.0 3000.0    3.30    5.59    15
292.0 4618.0 3000.0   10.73    6.06    15
292.0 4621.0 3000.0   27.32    7.30    15
292.0 4624.0 3000.0    8.21    4.66    15
292.0 4627.0 3000.0   22.96    5.49    15
292.0 4630.0 3000.0   10.50    4.02    15
292.0 4633.0 3000.0   23.04    5.63    15
292.0 4636.0 3000.0   36.05    6.30    15
292.0 4639.0 3000.0    5.08    1.55    15
292.0 4642.0 3000.0   31.45    3.66    15
292.0 4645.0 3000.0    6.79    1.88    15
292.0 4648.0 3000.0    3.97    2.72    15
```

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292.0 4651.0 3000.0    53.16     9.94      15
292.0 4654.0 3000.0    37.65     7.85      15
295.0 4576.0 3000.0     0.00     0.00      15
295.0 4579.0 3000.0     0.00     0.00      15
295.0 4582.0 3000.0     0.00     0.00      15
295.0 4585.0 3000.0     0.00     0.00      15
295.0 4588.0 3000.0     0.05     0.02      15
295.0 4591.0 3000.0     1.08     0.59      15
295.0 4594.0 3000.0     3.35     1.08      15
295.0 4597.0 3000.0     9.30     1.66      15
295.0 4600.0 3000.0     5.24     1.90      15
295.0 4603.0 3000.0     3.85     1.24      15
295.0 4606.0 3000.0    12.03     2.52      15
295.0 4609.0 3000.0     6.37     1.95      15
295.0 4612.0 3000.0     7.51     1.90      15
295.0 4615.0 3000.0     8.37     4.02      15
295.0 4618.0 3000.0    25.58     8.68      15
295.0 4621.0 3000.0    60.41    10.75      15
295.0 4624.0 3000.0    40.57    10.91      15
295.0 4627.0 3000.0    80.84    18.20      15
295.0 4630.0 3000.0    93.00    20.00      15
295.0 4633.0 3000.0    55.43    19.20      15
295.0 4636.0 3000.0    24.04     7.81      15
295.0 4639.0 3000.0     1.29     1.56      15
295.0 4642.0 3000.0     3.29     1.99      15
295.0 4645.0 3000.0    15.45     4.02      15
295.0 4648.0 3000.0    10.53     3.46      15
295.0 4651.0 3000.0     1.94     1.82      15
295.0 4654.0 3000.0     6.84     2.48      15
298.0 4576.0 3000.0     0.00     0.00      15
298.0 4579.0 3000.0     0.00     0.00      15
298.0 4582.0 3000.0     0.00     0.00      15
298.0 4585.0 3000.0     0.00     0.00      15
298.0 4588.0 3000.0     0.00     0.00      15
298.0 4591.0 3000.0     2.09     0.38      15
298.0 4594.0 3000.0     1.05     0.24      15
298.0 4597.0 3000.0     1.47     0.52      15
298.0 4600.0 3000.0     0.25     0.09      15
298.0 4603.0 3000.0     0.00     0.00      15
298.0 4606.0 3000.0     2.34     0.32      15
298.0 4609.0 3000.0     5.58     0.76      15
298.0 4612.0 3000.0     0.27     0.17      15
298.0 4615.0 3000.0     2.40     1.62      15
298.0 4618.0 3000.0    16.03     7.83      15
298.0 4621.0 3000.0    21.24     8.98      15
298.0 4624.0 3000.0    80.45    12.98      15
298.0 4627.0 3000.0   102.86    22.23      15
298.0 4630.0 3000.0   118.99    23.64      15
298.0 4633.0 3000.0   127.08    24.40      15
298.0 4636.0 3000.0    78.92    17.65      15
298.0 4639.0 3000.0    54.75     8.53      15
298.0 4642.0 3000.0    25.48     4.57      15
298.0 4645.0 3000.0     8.09     2.97      15
298.0 4648.0 3000.0     1.46     1.37      15
298.0 4651.0 3000.0     1.16     1.19      15
298.0 4654.0 3000.0     1.20     1.20      15
301.0 4576.0 3000.0     0.00     0.00      15
301.0 4579.0 3000.0     0.00     0.00      15
301.0 4582.0 3000.0     0.00     0.00      15
```

```
301.0 4585.0 3000.0      0.00      0.00       15
301.0 4588.0 3000.0      0.00      0.00       15
301.0 4591.0 3000.0      9.30      1.59       15
301.0 4594.0 3000.0      8.75      1.25       15
301.0 4597.0 3000.0      4.59      1.75       15
301.0 4600.0 3000.0      0.51      0.23       15
301.0 4603.0 3000.0      0.32      0.16       15
301.0 4606.0 3000.0      0.07      0.01       15
301.0 4609.0 3000.0      0.00      0.00       15
301.0 4612.0 3000.0      0.02      0.01       15
301.0 4615.0 3000.0      2.74      2.12       15
301.0 4618.0 3000.0      5.16      5.00       15
301.0 4621.0 3000.0      6.06      2.14       15
301.0 4624.0 3000.0     18.75      4.57       15
301.0 4627.0 3000.0     35.44      6.62       15
301.0 4630.0 3000.0     35.69      9.91       15
301.0 4633.0 3000.0     90.91     17.93       15
301.0 4636.0 3000.0    114.55     19.73       15
301.0 4639.0 3000.0    111.54     16.49       15
301.0 4642.0 3000.0     12.27      2.93       15
301.0 4645.0 3000.0      7.45      1.72       15
301.0 4648.0 3000.0      1.59      1.14       15
301.0 4651.0 3000.0      0.48      0.77       15
301.0 4654.0 3000.0      0.42      0.75       15
304.0 4576.0 3000.0      0.00      0.00       15
304.0 4579.0 3000.0      0.00      0.00       15
304.0 4582.0 3000.0      0.00      0.00       15
304.0 4585.0 3000.0      0.00      0.00       15
304.0 4588.0 3000.0      0.00      0.00       15
304.0 4591.0 3000.0      2.07      1.76       15
304.0 4594.0 3000.0     11.69      2.58       15
304.0 4597.0 3000.0     12.47      1.89       15
304.0 4600.0 3000.0      8.24      0.73       15
304.0 4603.0 3000.0      6.04      0.53       15
304.0 4606.0 3000.0      2.17      0.23       15
304.0 4609.0 3000.0      0.16      0.02       15
304.0 4612.0 3000.0      2.92      0.29       15
304.0 4615.0 3000.0      4.28      0.44       15
304.0 4618.0 3000.0      3.68      0.36       15
304.0 4621.0 3000.0      7.90      1.64       15
304.0 4624.0 3000.0     16.79      6.39       15
304.0 4627.0 3000.0     15.91      5.25       15
304.0 4630.0 3000.0     43.99      6.61       15
304.0 4633.0 3000.0     42.17      7.99       15
304.0 4636.0 3000.0     28.50      8.41       15
304.0 4639.0 3000.0     30.51      6.97       15
304.0 4642.0 3000.0      3.45      1.93       15
304.0 4645.0 3000.0      2.84      1.44       15
304.0 4648.0 3000.0     17.70      3.47       15
304.0 4651.0 3000.0     24.31      3.68       15
304.0 4654.0 3000.0      3.10      1.13       15
307.0 4576.0 3000.0      0.00      0.00       15
307.0 4579.0 3000.0      0.00      0.00       15
307.0 4582.0 3000.0      0.00      0.00       15
307.0 4585.0 3000.0      0.00      0.00       15
307.0 4588.0 3000.0      0.00      0.00       15
307.0 4591.0 3000.0      5.44      1.68       15
307.0 4594.0 3000.0     13.25      4.02       15
307.0 4597.0 3000.0     17.73      5.94       15
```

```
307.0 4600.0 3000.0     7.11     2.14     15
307.0 4603.0 3000.0    25.14     2.76     15
307.0 4606.0 3000.0     9.22     0.87     15
307.0 4609.0 3000.0     7.12     0.66     15
307.0 4612.0 3000.0     0.19     0.09     15
307.0 4615.0 3000.0     2.64     0.50     15
307.0 4618.0 3000.0     1.49     0.58     15
307.0 4621.0 3000.0    11.72     3.49     15
307.0 4624.0 3000.0     2.59     1.18     15
307.0 4627.0 3000.0     8.51     1.90     15
307.0 4630.0 3000.0     1.03     1.29     15
307.0 4633.0 3000.0     1.68     1.26     15
307.0 4636.0 3000.0     1.01     1.05     15
307.0 4639.0 3000.0     4.98     1.91     15
307.0 4642.0 3000.0    11.77     2.75     15
307.0 4645.0 3000.0    27.48     3.30     15
307.0 4648.0 3000.0    21.23     3.26     15
307.0 4651.0 3000.0    22.75     3.34     15
307.0 4654.0 3000.0     3.66     1.68     15
310.0 4576.0 3000.0     0.00     0.00     15
310.0 4579.0 3000.0     0.00     0.00     15
310.0 4582.0 3000.0     0.00     0.00     15
310.0 4585.0 3000.0     0.00     0.00     15
310.0 4588.0 3000.0     0.00     0.00     15
310.0 4591.0 3000.0     0.64     0.06     15
310.0 4594.0 3000.0     1.61     0.58     15
310.0 4597.0 3000.0     1.70     0.68     15
310.0 4600.0 3000.0     0.99     1.20     15
310.0 4603.0 3000.0     6.28     2.16     15
310.0 4606.0 3000.0     4.77     3.22     15
310.0 4609.0 3000.0    35.86     6.19     15
310.0 4612.0 3000.0     4.25     1.94     15
310.0 4615.0 3000.0    40.58     6.46     15
310.0 4618.0 3000.0    12.43     4.11     15
310.0 4621.0 3000.0    25.65     4.65     15
310.0 4624.0 3000.0     4.76     1.31     15
310.0 4627.0 3000.0     0.15     0.43     15
310.0 4630.0 3000.0     0.57     0.44     15
310.0 4633.0 3000.0     0.37     0.44     15
310.0 4636.0 3000.0     0.29     0.42     15
310.0 4639.0 3000.0     0.38     0.44     15
310.0 4642.0 3000.0    12.71     2.66     15
310.0 4645.0 3000.0    57.50     6.65     15
310.0 4648.0 3000.0     1.57     1.40     15
310.0 4651.0 3000.0     1.48     0.73     15
310.0 4654.0 3000.0     0.97     1.32     15
313.0 4576.0 3000.0     0.00     0.00     15
313.0 4579.0 3000.0     0.00     0.00     15
313.0 4582.0 3000.0     0.00     0.00     15
313.0 4585.0 3000.0     0.00     0.00     15
313.0 4588.0 3000.0     0.00     0.00     15
313.0 4591.0 3000.0     0.00     0.00     15
313.0 4594.0 3000.0     0.01     0.00     15
313.0 4597.0 3000.0     0.33     0.14     15
313.0 4600.0 3000.0     0.47     0.19     15
313.0 4603.0 3000.0     0.50     0.18     15
313.0 4606.0 3000.0     0.50     0.16     15
313.0 4609.0 3000.0    10.87     3.61     15
313.0 4612.0 3000.0     3.54     1.02     15
```

```
313.0 4615.0 3000.0      1.94      0.22      15
313.0 4618.0 3000.0      1.15      0.56      15
313.0 4621.0 3000.0      1.68      1.10      15
313.0 4624.0 3000.0      5.80      1.51      15
313.0 4627.0 3000.0      0.73      0.59      15
313.0 4630.0 3000.0      0.99      0.54      15
313.0 4633.0 3000.0      5.10      0.88      15
313.0 4636.0 3000.0      0.76      0.50      15
313.0 4639.0 3000.0      1.11      0.56      15
313.0 4642.0 3000.0      1.78      1.55      15
313.0 4645.0 3000.0      2.81      1.28      15
313.0 4648.0 3000.0      0.69      0.47      15
313.0 4651.0 3000.0      0.97      0.48      15
313.0 4654.0 3000.0      7.21      1.25      15
316.0 4576.0 3000.0      0.00      0.00      15
316.0 4579.0 3000.0      0.00      0.00      15
316.0 4582.0 3000.0      0.00      0.00      15
316.0 4585.0 3000.0      0.00      0.00      15
316.0 4588.0 3000.0      0.00      0.00      15
316.0 4591.0 3000.0      0.51      0.23      15
316.0 4594.0 3000.0      0.86      0.29      15
316.0 4597.0 3000.0      0.46      0.26      15
316.0 4600.0 3000.0      0.26      0.22      15
316.0 4603.0 3000.0      0.92      0.56      15
316.0 4606.0 3000.0      1.16      0.75      15
316.0 4609.0 3000.0      0.84      0.59      15
316.0 4612.0 3000.0      5.00      4.21      15
316.0 4615.0 3000.0     70.75      7.96      15
316.0 4618.0 3000.0     62.33      6.05      15
316.0 4621.0 3000.0     15.95      3.55      15
316.0 4624.0 3000.0      2.54      1.25      15
316.0 4627.0 3000.0      2.37      0.95      15
316.0 4630.0 3000.0      0.24      0.38      15
316.0 4633.0 3000.0      0.76      0.48      15
316.0 4636.0 3000.0      0.90      0.48      15
316.0 4639.0 3000.0      0.87      0.74      15
316.0 4642.0 3000.0      0.56      0.52      15
316.0 4645.0 3000.0     13.12      1.59      15
316.0 4648.0 3000.0      4.87      0.97      15
316.0 4651.0 3000.0      5.52      0.97      15
316.0 4654.0 3000.0     40.79      4.10      15
319.0 4576.0 3000.0      0.00      0.00      15
319.0 4579.0 3000.0      0.00      0.00      15
319.0 4582.0 3000.0      0.00      0.00      15
319.0 4585.0 3000.0      0.00      0.00      15
319.0 4588.0 3000.0      0.00      0.00      15
319.0 4591.0 3000.0      0.15      0.04      15
319.0 4594.0 3000.0      0.43      0.22      15
319.0 4597.0 3000.0      0.19      0.18      15
319.0 4600.0 3000.0      0.18      0.18      15
319.0 4603.0 3000.0      0.52      0.48      15
319.0 4606.0 3000.0      0.56      0.58      15
319.0 4609.0 3000.0      2.01      0.85      15
319.0 4612.0 3000.0      2.69      2.03      15
319.0 4615.0 3000.0     88.27     12.25      15
319.0 4618.0 3000.0    127.46     13.46      15
319.0 4621.0 3000.0     35.74      6.43      15
319.0 4624.0 3000.0      4.55      2.35      15
319.0 4627.0 3000.0      0.78      1.15      15
```

```
319.0 4630.0 3000.0     4.21     0.65     15
319.0 4633.0 3000.0     0.78     0.42     15
319.0 4636.0 3000.0     3.49     0.67     15
319.0 4639.0 3000.0     0.92     1.01     15
319.0 4642.0 3000.0     2.77     0.90     15
319.0 4645.0 3000.0     4.97     0.33     15
319.0 4648.0 3000.0     1.86     0.62     15
319.0 4651.0 3000.0     0.38     0.49     15
319.0 4654.0 3000.0     0.73     0.46     15
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```
 262.0 4576.0 3000.0    1.99    0.66    15
262.0 4579.0 3000.0    9.64    1.52    15
262.0 4582.0 3000.0   33.46    5.65    15
262.0 4585.0 3000.0    7.42    1.82    15
262.0 4588.0 3000.0    0.36    0.72    15
262.0 4591.0 3000.0    1.22    1.24    15
262.0 4594.0 3000.0    0.37    0.85    15
262.0 4597.0 3000.0    0.10    0.12    15
262.0 4600.0 3000.0    0.10    0.11    15
262.0 4603.0 3000.0    0.02    0.06    15
262.0 4606.0 3000.0    0.02    0.07    15
262.0 4609.0 3000.0    0.04    0.10    15
262.0 4612.0 3000.0    0.12    0.11    15
262.0 4615.0 3000.0    0.10    0.12    15
262.0 4618.0 3000.0    0.17    0.14    15
262.0 4621.0 3000.0    0.16    0.11    15
262.0 4624.0 3000.0    0.21    0.09    15
262.0 4627.0 3000.0    0.20    0.09    15
262.0 4630.0 3000.0    3.65    0.75    15
262.0 4633.0 3000.0    0.19    0.10    15
262.0 4636.0 3000.0    0.25    0.40    15
262.0 4639.0 3000.0    7.44    0.67    15
262.0 4642.0 3000.0    4.32    0.78    15
262.0 4645.0 3000.0    0.13    0.07    15
262.0 4648.0 3000.0    0.27    0.10    15
262.0 4651.0 3000.0    0.02    0.05    15
262.0 4654.0 3000.0    0.18    0.10    15
265.0 4576.0 3000.0    0.60    0.19    15
265.0 4579.0 3000.0    4.18    2.00    15
265.0 4582.0 3000.0    2.92    0.67    15
265.0 4585.0 3000.0    6.63    1.70    15
265.0 4588.0 3000.0    4.30    1.24    15
265.0 4591.0 3000.0    1.22    1.24    15
265.0 4594.0 3000.0    0.37    0.85    15
265.0 4597.0 3000.0    0.10    0.12    15
265.0 4600.0 3000.0    0.10    0.11    15
265.0 4603.0 3000.0    0.02    0.06    15
265.0 4606.0 3000.0    0.02    0.07    15
265.0 4609.0 3000.0    0.04    0.10    15
265.0 4612.0 3000.0    0.12    0.11    15
265.0 4615.0 3000.0    0.10    0.12    15
265.0 4618.0 3000.0    0.17    0.14    15
265.0 4621.0 3000.0    0.16    0.11    15
265.0 4624.0 3000.0    0.21    0.09    15
265.0 4627.0 3000.0    0.20    0.09    15
265.0 4630.0 3000.0    3.65    0.75    15
265.0 4633.0 3000.0    0.19    0.10    15
265.0 4636.0 3000.0    0.25    0.40    15
265.0 4639.0 3000.0    7.44    0.67    15
265.0 4642.0 3000.0    4.32    0.78    15
265.0 4645.0 3000.0    0.13    0.07    15
265.0 4648.0 3000.0    0.27    0.10    15
265.0 4651.0 3000.0    0.02    0.05    15
265.0 4654.0 3000.0    0.18    0.10    15
268.0 4576.0 3000.0    0.85    0.20    15
268.0 4579.0 3000.0    2.50    1.88    15
268.0 4582.0 3000.0    0.42    0.47    15
268.0 4585.0 3000.0   13.47    1.64    15
268.0 4588.0 3000.0    0.30    0.33    15
```

```
268.0 4591.0 3000.0      1.01       0.32        15
268.0 4594.0 3000.0      0.52       0.39        15
268.0 4597.0 3000.0      2.08       0.30        15
268.0 4600.0 3000.0      2.08       0.30        15
268.0 4603.0 3000.0      0.02       0.06        15
268.0 4606.0 3000.0      0.05       0.08        15
268.0 4609.0 3000.0      0.05       0.10        15
268.0 4612.0 3000.0      0.12       0.11        15
268.0 4615.0 3000.0      0.10       0.12        15
268.0 4618.0 3000.0      0.17       0.14        15
268.0 4621.0 3000.0      0.16       0.11        15
268.0 4624.0 3000.0      0.21       0.05        15
268.0 4627.0 3000.0      0.20       0.09        15
268.0 4630.0 3000.0      4.65       0.75        15
268.0 4633.0 3000.0      0.19       0.10        15
268.0 4636.0 3000.0      0.25       0.40        15
268.0 4639.0 3000.0      7.44       0.67        15
268.0 4642.0 3000.0      4.32       0.76        15
268.0 4645.0 3000.0      0.13       0.07        15
268.0 4648.0 3000.0      0.27       0.10        15
268.0 4651.0 3000.0      0.02       0.05        15
268.0 4654.0 3000.0      0.18       0.10        15
271.0 4576.0 3000.0      0.03       0.01        15
271.0 4579.0 3000.0      0.73       0.52        15
271.0 4582.0 3000.0      0.17       0.23        15
271.0 4585.0 3000.0      0.15       0.13        15
271.0 4588.0 3000.0      0.33       0.35        15
271.0 4591.0 3000.0      2.69       0.36        15
271.0 4594.0 3000.0      0.73       1.24        15
271.0 4597.0 3000.0      3.37       0.38        15
271.0 4600.0 3000.0      0.48       0.16        15
271.0 4603.0 3000.0      0.19       0.08        15
271.0 4606.0 3000.0      0.10       0.09        15
271.0 4609.0 3000.0      0.04       0.10        15
271.0 4612.0 3000.0      0.04       0.10        15
271.0 4615.0 3000.0      0.10       0.12        15
271.0 4618.0 3000.0      0.22       0.15        15
271.0 4621.0 3000.0      0.16       0.11        15
271.0 4624.0 3000.0      0.05       0.06        15
271.0 4627.0 3000.0      3.86       0.40        15
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271.0 4633.0 3000.0      0.29       0.32        15
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271.0 4639.0 3000.0      0.10       0.08        15
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274.0 4582.0 3000.0      1.65       0.64        15
274.0 4585.0 3000.0      0.04       0.05        15
274.0 4588.0 3000.0      6.33       0.64        15
274.0 4591.0 3000.0      0.70       0.36        15
274.0 4594.0 3000.0      0.06       0.11        15
274.0 4597.0 3000.0      1.70       1.96        15
274.0 4600.0 3000.0      0.76       1.44        15
274.0 4603.0 3000.0      0.48       0.13        15
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274.0 4624.0 3000.0     0.09     0.21     15
274.0 4627.0 3000.0     0.17     0.25     15
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274.0 4633.0 3000.0     0.77     0.61     15
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274.0 4639.0 3000.0     0.15     0.09     15
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298.0 4588.0 3000.0     0.00      0.00        15
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310.0 4642.0 3000.0    10.77      2.59      15
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310.0 4648.0 3000.0     1.63      1.44      15
310.0 4651.0 3000.0     1.54      0.76      15
310.0 4654.0 3000.0     1.01      1.87      15
313.0 4576.0 3000.0     0.00      0.00      15
313.0 4579.0 3000.0     0.00      0.00      15
313.0 4582.0 3000.0     0.00      0.00      15
313.0 4585.0 3000.0     0.00      0.00      15
313.0 4588.0 3000.0     0.00      0.00      15
313.0 4591.0 3000.0     0.00      0.00      15
313.0 4594.0 3000.0     0.01      0.00      15
313.0 4597.0 3000.0     0.36      0.15      15
313.0 4600.0 3000.0     0.43      0.19      15
313.0 4603.0 3000.0     0.52      0.19      15
313.0 4606.0 3000.0     0.51      0.16      15
313.0 4609.0 3000.0    12.26      3.91      15
313.0 4612.0 3000.0     3.56      1.04      15
```

```
313.0 4615.0 3000.0      1.94      0.22      15
313.0 4618.0 3000.0      1.15      0.56      15
313.0 4621.0 3000.0      1.70      1.12      15
313.0 4624.0 3000.0      5.54      1.51      15
313.0 4627.0 3000.0      0.76      0.61      15
313.0 4630.0 3000.0      1.03      0.56      15
313.0 4633.0 3000.0      4.38      0.83      15
313.0 4636.0 3000.0      0.79      0.52      15
313.0 4639.0 3000.0      1.16      0.58      15
313.0 4642.0 3000.0      1.85      1.60      15
313.0 4645.0 3000.0      2.94      1.32      15
313.0 4648.0 3000.0      0.72      0.48      15
313.0 4651.0 3000.0      1.01      0.49      15
313.0 4654.0 3000.0      6.59      1.22      15
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316.0 4585.0 3000.0      0.00      0.00      15
316.0 4588.0 3000.0      0.00      0.00      15
316.0 4591.0 3000.0      0.54      0.24      15
316.0 4594.0 3000.0      0.92      0.31      15
316.0 4597.0 3000.0      0.49      0.27      15
316.0 4600.0 3000.0      0.26      0.23      15
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316.0 4606.0 3000.0      1.19      0.77      15
316.0 4609.0 3000.0      0.86      0.60      15
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316.0 4624.0 3000.0      2.55      1.27      15
316.0 4627.0 3000.0      2.48      0.94      15
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316.0 4633.0 3000.0      0.79      0.50      15
316.0 4636.0 3000.0      0.94      0.49      15
316.0 4639.0 3000.0      0.91      0.77      15
316.0 4642.0 3000.0      0.58      0.53      15
316.0 4645.0 3000.0     11.30      1.45      15
316.0 4648.0 3000.0      4.57      0.96      15
316.0 4651.0 3000.0      4.82      0.94      15
316.0 4654.0 3000.0     34.36      3.60      15
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319.0 4579.0 3000.0      0.00      0.00      15
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319.0 4585.0 3000.0      0.00      0.00      15
319.0 4588.0 3000.0      0.00      0.00      15
319.0 4591.0 3000.0      0.17      0.05      15
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319.0 4597.0 3000.0      0.21      0.19      15
319.0 4600.0 3000.0      0.19      0.18      15
319.0 4603.0 3000.0      0.54      0.50      15
319.0 4606.0 3000.0      0.57      0.60      15
319.0 4609.0 3000.0      2.05      0.88      15
319.0 4612.0 3000.0      2.72      2.08      15
319.0 4615.0 3000.0     83.71     11.92      15
319.0 4618.0 3000.0    120.60     12.93      15
319.0 4621.0 3000.0     34.03      6.32      15
319.0 4624.0 3000.0      4.56      2.38      15
319.0 4627.0 3000.0      0.81      1.18      15
```

```
319.0 4630.0 3000.0     3.44     0.60      15
319.0 4633.0 3000.0     0.82     0.44      15
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319.0 4642.0 3000.0     2.37     0.88      15
319.0 4645.0 3000.0     4.24     0.78      15
319.0 4648.0 3000.0     1.94     0.64      15
319.0 4651.0 3000.0     0.92     0.51      15
319.0 4654.0 3000.0     0.76     0.48      15
```

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```
 262.0 4576.0 3000.0     2.40     0.79     15
262.0 4579.0 3000.0    10.96     1.65     15
262.0 4582.0 3000.0    35.28     6.21     15
262.0 4585.0 3000.0     7.69     1.94     15
262.0 4588.0 3000.0     0.37     0.77     15
262.0 4591.0 3000.0     1.27     1.32     15
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262.0 4597.0 3000.0     0.10     0.12     15
262.0 4600.0 3000.0     0.11     0.12     15
262.0 4603.0 3000.0     0.02     0.06     15
262.0 4606.0 3000.0     0.03     0.07     15
262.0 4609.0 3000.0     0.04     0.11     15
262.0 4612.0 3000.0     0.13     0.12     15
262.0 4615.0 3000.0     0.11     0.13     15
262.0 4618.0 3000.0     0.20     0.15     15
262.0 4621.0 3000.0     0.17     0.12     15
262.0 4624.0 3000.0     0.23     0.10     15
262.0 4627.0 3000.0     0.21     0.09     15
262.0 4630.0 3000.0     3.74     0.79     15
262.0 4633.0 3000.0     0.20     0.10     15
262.0 4636.0 3000.0     0.26     0.43     15
262.0 4639.0 3000.0     7.45     0.68     15
262.0 4642.0 3000.0     4.36     0.81     15
262.0 4645.0 3000.0     0.14     0.08     15
262.0 4648.0 3000.0     0.29     0.11     15
262.0 4651.0 3000.0     0.02     0.06     15
262.0 4654.0 3000.0     0.21     0.11     15
265.0 4576.0 3000.0     0.67     0.21     15
265.0 4579.0 3000.0     4.58     2.20     15
265.0 4582.0 3000.0     3.02     0.72     15
265.0 4585.0 3000.0     6.67     1.77     15
265.0 4588.0 3000.0     4.33     1.28     15
265.0 4591.0 3000.0     1.27     1.32     15
265.0 4594.0 3000.0     0.38     0.90     15
265.0 4597.0 3000.0     0.10     0.12     15
265.0 4600.0 3000.0     0.11     0.12     15
265.0 4603.0 3000.0     0.02     0.06     15
265.0 4606.0 3000.0     0.03     0.07     15
265.0 4609.0 3000.0     0.04     0.11     15
265.0 4612.0 3000.0     0.13     0.12     15
265.0 4615.0 3000.0     0.11     0.13     15
265.0 4618.0 3000.0     0.20     0.15     15
265.0 4621.0 3000.0     0.17     0.12     15
265.0 4624.0 3000.0     0.23     0.10     15
265.0 4627.0 3000.0     0.21     0.09     15
265.0 4630.0 3000.0     3.74     0.79     15
265.0 4633.0 3000.0     0.20     0.10     15
265.0 4636.0 3000.0     0.26     0.43     15
265.0 4639.0 3000.0     7.45     0.68     15
265.0 4642.0 3000.0     4.36     0.81     15
265.0 4645.0 3000.0     0.14     0.08     15
265.0 4648.0 3000.0     0.29     0.11     15
265.0 4651.0 3000.0     0.02     0.06     15
265.0 4654.0 3000.0     0.21     0.11     15
268.0 4576.0 3000.0     0.95     0.24     15
268.0 4579.0 3000.0     2.38     2.07     15
268.0 4582.0 3000.0     0.50     0.52     15
268.0 4585.0 3000.0    13.48     1.66     15
268.0 4588.0 3000.0     0.29     0.35     15
```

```
268.0 4591.0 3000.0      1.06      0.93      15
268.0 4594.0 3000.0      0.73      0.94      15
268.0 4597.0 3000.0      2.08      0.30      15
268.0 4600.0 3000.0      2.10      0.31      15
268.0 4603.0 3000.0      0.02      0.06      15
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268.0 4609.0 3000.0      0.05      0.11      15
268.0 4612.0 3000.0      0.13      0.12      15
268.0 4615.0 3000.0      0.11      0.13      15
268.0 4618.0 3000.0      0.20      0.15      15
268.0 4621.0 3000.0      0.17      0.12      15
268.0 4624.0 3000.0      0.23      0.10      15
268.0 4627.0 3000.0      0.21      0.07      15
268.0 4630.0 3000.0      3.74      0.79      15
268.0 4633.0 3000.0      0.20      0.10      15
268.0 4636.0 3000.0      0.26      0.43      15
268.0 4639.0 3000.0      7.45      0.68      15
268.0 4642.0 3000.0      4.36      0.31      15
268.0 4645.0 3000.0      0.14      0.09      15
268.0 4648.0 3000.0      0.29      0.11      15
268.0 4651.0 3000.0      0.02      0.06      15
268.0 4654.0 3000.0      0.21      0.11      15
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271.0 4594.0 3000.0      0.78      1.32      15
271.0 4597.0 3000.0      3.39      1.01      15
271.0 4600.0 3000.0      0.50      0.17      15
271.0 4603.0 3000.0      0.20      0.09      15
271.0 4606.0 3000.0      0.12      0.10      15
271.0 4609.0 3000.0      0.05      0.11      15
271.0 4612.0 3000.0      0.05      0.11      15
271.0 4615.0 3000.0      0.11      0.13      15
271.0 4618.0 3000.0      0.25      0.17      15
271.0 4621.0 3000.0      0.17      0.12      15
271.0 4624.0 3000.0      0.06      0.06      15
271.0 4627.0 3000.0      3.68      0.41      15
271.0 4630.0 3000.0      0.39      0.42      15
271.0 4633.0 3000.0      0.31      0.34      15
271.0 4636.0 3000.0      4.25      0.79      15
271.0 4639.0 3000.0      0.11      0.08      15
271.0 4642.0 3000.0      0.57      0.51      15
271.0 4645.0 3000.0      0.03      0.07      15
271.0 4648.0 3000.0      2.52      0.51      15
271.0 4651.0 3000.0      0.78      0.15      15
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274.0 4576.0 3000.0      0.00      0.00      15
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274.0 4582.0 3000.0      1.79      0.49      15
274.0 4585.0 3000.0      0.05      0.05      15
274.0 4588.0 3000.0      7.03      0.72      15
274.0 4591.0 3000.0      0.75      0.35      15
274.0 4594.0 3000.0      0.07      0.12      15
274.0 4597.0 4000.0      1.33      2.09      15
274.0 4600.0 3000.0      0.32      1.53      15
274.0 4603.0 3000.0      0.53      0.15      15
```

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274.0	4606.0	3000.0	0.09	0.09	15
274.0	4609.0	3000.0	0.09	0.15	15
274.0	4612.0	3000.0	0.40	0.28	15
274.0	4615.0	3000.0	0.27	0.17	15
274.0	4618.0	3000.0	0.84	0.36	15
274.0	4621.0	3000.0	0.09	0.20	15
274.0	4624.0	3000.0	0.09	0.22	15
274.0	4627.0	3000.0	0.18	0.27	15
274.0	4630.0	3000.0	0.11	0.08	15
274.0	4633.0	3000.0	0.82	0.65	15
274.0	4636.0	3000.0	0.45	0.33	15
274.0	4639.0	3000.0	0.16	0.10	15
274.0	4642.0	3000.0	0.94	0.64	15
274.0	4645.0	3000.0	2.83	0.55	15
274.0	4648.0	3000.0	11.31	1.60	15
274.0	4651.0	3000.0	0.19	0.11	15
274.0	4654.0	3000.0	0.77	0.28	15
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277.0	4588.0	3000.0	0.62	0.45	15
277.0	4591.0	3000.0	2.80	0.92	15
277.0	4594.0	3000.0	0.17	0.26	15
277.0	4597.0	3000.0	0.68	0.51	15
277.0	4600.0	3000.0	0.10	0.13	15
277.0	4603.0	3000.0	1.09	2.33	15
277.0	4606.0	3000.0	1.58	2.03	15
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277.0	4615.0	3000.0	0.59	0.22	15
277.0	4618.0	3000.0	0.42	0.47	15
277.0	4621.0	3000.0	0.68	0.22	15
277.0	4624.0	3000.0	0.11	0.09	15
277.0	4627.0	3000.0	1.78	0.40	15
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277.0	4633.0	3000.0	1.13	1.40	15
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277.0	4642.0	3000.0	1.83	1.38	15
277.0	4645.0	3000.0	1.11	0.92	15
277.0	4648.0	3000.0	7.74	1.41	15
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280.0	4582.0	3000.0	0.84	0.34	15
280.0	4585.0	3000.0	0.71	0.73	15
280.0	4588.0	3000.0	0.17	0.10	15
280.0	4591.0	3000.0	3.90	0.55	15
280.0	4594.0	3000.0	0.32	0.53	15
280.0	4597.0	3000.0	0.29	0.34	15
280.0	4600.0	3000.0	0.19	0.12	15
280.0	4603.0	3000.0	0.20	0.11	15
280.0	4606.0	3000.0	0.20	0.23	15
280.0	4609.0	3000.0	0.79	1.39	15
280.0	4612.0	3000.0	1.02	1.73	15
280.0	4615.0	3000.0	1.27	0.46	15
280.0	4618.0	3000.0	3.88	1.16	15

```
280.0 4621.0 3000.0      0.35      0.16      15
280.0 4624.0 3000.0      0.21      0.12      15
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280.0 4654.0 3000.0      0.02      0.06      15
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283.0 4582.0 3000.0      0.18      0.13      15
283.0 4585.0 3000.0      0.64      0.83      15
283.0 4588.0 3000.0      0.18      0.19      15
283.0 4591.0 3000.0      0.04      0.14      15
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283.0 4603.0 3000.0      0.11      0.09      15
283.0 4606.0 3000.0      0.17      0.21      15
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283.0 4633.0 3000.0      5.18      1.88      15
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283.0 4654.0 3000.0      1.06      0.77      15
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286.0 4585.0 3000.0      1.00      1.23      15
286.0 4588.0 3000.0      2.57      0.62      15
286.0 4591.0 3000.0      0.26      0.21      15
286.0 4594.0 3000.0      5.04      1.14      15
286.0 4597.0 3000.0      1.31      0.33      15
286.0 4600.0 3000.0      1.61      0.34      15
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286.0 4606.0 3000.0      0.22      0.15      15
286.0 4609.0 3000.0      0.20      0.27      15
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286.0 4615.0 3000.0     16.55      4.31      15
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286.0 4624.0 3000.0      1.77      0.76      15
286.0 4627.0 3000.0      3.32      1.19      15
286.0 4630.0 3000.0      7.74      0.93      15
286.0 4633.0 3000.0      2.12      1.42      15
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295.0 4585.0 3000.0       0.00      0.00        15
295.0 4588.0 3000.0       0.33      0.12        15
295.0 4591.0 3000.0       1.25      0.56        15
295.0 4594.0 3000.0       4.25      1.31        15
295.0 4597.0 3000.0      10.64      1.93        15
295.0 4600.0 3000.0       6.09      2.16        15
295.0 4603.0 3000.0       5.42      1.[illegible]        15
295.0 4606.0 3000.0      16.93      [illegible]        15
295.0 4609.0 3000.0       4.42      2.41        15
295.0 4612.0 3000.0       8.17      2.07        15
295.0 4615.0 3000.0       8.77      4.24        15
295.0 4618.0 3000.0      26.89      9.32        15
295.0 4621.0 3000.0      62.64     11.39        15
295.0 4624.0 3000.0      42.96     11.91        15
295.0 4627.0 3000.0      85.43     19.32        15
295.0 4630.0 3000.0      94.90     21.07        15
295.0 4633.0 3000.0      56.85     20.38        15
295.0 4636.0 3000.0      24.70      8.29        15
295.0 4639.0 3000.0       1.43      1.74        15
295.0 4642.0 3000.0       4.59      2.22        15
295.0 4645.0 3000.0      16.34      4.35        15
295.0 4648.0 3000.0      11.49      5.86        15
295.0 4651.0 3000.0       2.19      4.02        15
295.0 4654.0 3000.0       7.06      2.70        15
298.0 4576.0 3000.0       0.00      0.00        15
298.0 4579.0 3000.0       0.00      0.00        15
298.0 4582.0 3000.0       0.00      0.00        15
298.0 4585.0 3000.0       0.00      0.00        15
298.0 4588.0 3000.0       0.00      0.00        15
298.0 4591.0 3000.0       2.16      0.41        15
298.0 4594.0 3000.0       1.29      0.32        15
298.0 4597.0 3000.0       2.36      0.34        15
298.0 4600.0 3000.0       0.36      0.12        15
298.0 4603.0 3000.0       0.00      0.00        15
298.0 4606.0 3000.0       3.30      0.43        15
298.0 4609.0 3000.0       7.90      1.04        15
298.0 4612.0 3000.0       [illegible].81      1.15        15
298.0 4615.0 3000.0       [illegible].54      1.7[illegible]        15
298.0 4618.0 3000.0      16.87      9.43        15
298.0 4621.0 3000.0      22.32      7.59        15
298.0 4624.0 3000.0      83.44     13.80        15
298.0 4627.0 3000.0     104.59     23.46        15
298.0 4630.0 3000.0     121.92     25.77        15
298.0 4633.0 3000.0     13[illegible].1[illegible]     25.68        15
298.0 4636.0 3000.0      7[illegible].[illegible]     18.3[illegible]        15
298.0 4639.0 3000.0      58.28      9.65        15
298.0 4642.0 3000.0      29.56      5.01        15
298.0 4645.0 3000.0       [illegible].06      3.27        15
298.0 4648.0 3000.0       1.73      1.5[illegible]        15
298.0 4651.0 3000.0       1.28      1.32        15
298.0 4654.0 3000.0       1.[illegible]      1.32        15
301.0 4576.0 3000.0       0.00      0.00        15
301.0 4579.0 3000.0       0.00      0.00        15
301.0 4582.0 3000.0       0.00      0.00        15
```

```
286.0 4636.0 3000.0     6.98     2.15     15
286.0 4639.0 3000.0     4.14     1.40     15
286.0 4642.0 3000.0     1.01     0.60     15
286.0 4645.0 3000.0     0.83     1.03     15
286.0 4648.0 3000.0     6.37     1.30     15
286.0 4651.0 3000.0    29.61     4.52     15
286.0 4654.0 3000.0    21.57     3.66     15
289.0 4576.0 3000.0     0.00     0.00     15
289.0 4579.0 3000.0     0.00     0.00     15
289.0 4582.0 3000.0     2.94     1.48     15
289.0 4585.0 3000.0     1.45     0.56     15
289.0 4588.0 3000.0     6.74     2.33     15
289.0 4591.0 3000.0    13.91     2.42     15
289.0 4594.0 3000.0     5.91     1.35     15
289.0 4597.0 3000.0     0.21     0.22     15
289.0 4600.0 3000.0     0.36     0.33     15
289.0 4603.0 3000.0     1.01     0.52     15
289.0 4606.0 3000.0     1.19     1.35     15
289.0 4609.0 3000.0     7.01     1.09     15
289.0 4612.0 3000.0     5.10     1.01     15
289.0 4615.0 3000.0    25.54     6.43     15
289.0 4618.0 3000.0    48.74     9.95     15
289.0 4621.0 3000.0    17.95     4.18     15
289.0 4624.0 3000.0     1.02     1.01     15
289.0 4627.0 3000.0     1.36     1.52     15
289.0 4630.0 3000.0     4.34     1.68     15
289.0 4633.0 3000.0    10.57     2.18     15
289.0 4636.0 3000.0     7.16     2.71     15
289.0 4639.0 3000.0     4.60     1.81     15
289.0 4642.0 3000.0    13.04     2.30     15
289.0 4645.0 3000.0     0.48     0.66     15
289.0 4648.0 3000.0     2.50     2.06     15
289.0 4651.0 3000.0    48.32     9.21     15
289.0 4654.0 3000.0     3.25     2.93     15
292.0 4576.0 3000.0     0.00     0.00     15
292.0 4579.0 3000.0     0.17     0.02     15
292.0 4582.0 3000.0     1.48     1.06     15
292.0 4585.0 3000.0     7.89     2.49     15
292.0 4588.0 3000.0     6.12     3.99     15
292.0 4591.0 3000.0     2.15     2.71     15
292.0 4594.0 3000.0     3.95     3.14     15
292.0 4597.0 3000.0     0.59     1.70     15
292.0 4600.0 3000.0     6.40     3.11     15
292.0 4603.0 3000.0    14.49     4.84     15
292.0 4606.0 3000.0     4.73     1.91     15
292.0 4609.0 3000.0    39.44     7.92     15
292.0 4612.0 3000.0     9.68     4.99     15
292.0 4615.0 3000.0     3.53     5.09     15
292.0 4618.0 3000.0    11.35     6.59     15
292.0 4621.0 3000.0    23.98     8.49     15
292.0 4624.0 3000.0     9.25     5.21     15
292.0 4627.0 3000.0    24.68     6.06     15
292.0 4630.0 3000.0    11.75     4.44     15
292.0 4633.0 3000.0    24.31     6.09     15
292.0 4636.0 3000.0    37.30     6.70     15
292.0 4639.0 3000.0     5.65     1.76     15
292.0 4642.0 3000.0    33.20     3.92     15
292.0 4645.0 3000.0     7.12     2.04     15
292.0 4648.0 3000.0     4.40     3.01     15
```

```
301.0 4585.0 3000.0     0.00    0.00     15
301.0 4588.0 3000.0     0.00    0.00     15
301.0 4591.0 3000.0     9.35    1.67     15
301.0 4594.0 3000.0     8.88    1.31     15
301.0 4597.0 3000.0     4.67    1.89     15
301.0 4600.0 3000.0     0.57    0.25     15
301.0 4603.0 3000.0     0.36    0.17     15
301.0 4606.0 3000.0     0.07    0.01     15
301.0 4609.0 3000.0     0.00    0.00     15
301.0 4612.0 3000.0     0.02    0.01     15
301.0 4615.0 3000.0     2.93    2.30     15
301.0 4618.0 3000.0     5.47    5.42     15
301.0 4621.0 3000.0     6.33    2.29     15
301.0 4624.0 3000.0    19.24    4.81     15
301.0 4627.0 3000.0    35.71    6.84     15
301.0 4630.0 3000.0    36.21   10.28     15
301.0 4633.0 3000.0    92.31   18.75     15
301.0 4636.0 3000.0   114.49   20.24     15
301.0 4639.0 3000.0   112.55   17.13     15
301.0 4642.0 3000.0    12.96    3.24     15
301.0 4645.0 3000.0     7.68    1.87     15
301.0 4648.0 3000.0     1.85    1.28     15
301.0 4651.0 3000.0     0.54    0.85     15
301.0 4654.0 3000.0     0.47    0.33     15
304.0 4576.0 3000.0     0.00    0.00     15
304.0 4579.0 3000.0     0.00    0.00     15
304.0 4582.0 3000.0     0.00    0.00     15
304.0 4585.0 3000.0     0.00    0.00     15
304.0 4588.0 3000.0     0.00    0.00     15
304.0 4591.0 3000.0     2.24    1.93     15
304.0 4594.0 3000.0    12.36    2.75     15
304.0 4597.0 3000.0    13.37    2.03     15
304.0 4600.0 3000.0     8.24    0.73     15
304.0 4603.0 3000.0     6.07    0.53     15
304.0 4606.0 3000.0     2.33    0.25     15
304.0 4609.0 3000.0     0.17    0.02     15
304.0 4612.0 3000.0     2.92    0.29     15
304.0 4615.0 3000.0     4.28    0.44     15
304.0 4618.0 3000.0     3.68    0.36     15
304.0 4621.0 3000.0     7.84    1.66     15
304.0 4624.0 3000.0    16.82    6.64     15
304.0 4627.0 3000.0    16.65    5.68     15
304.0 4630.0 3000.0    45.12    6.97     15
304.0 4633.0 3000.0    42.69    8.34     15
304.0 4636.0 3000.0    28.47    8.71     15
304.0 4639.0 3000.0    30.43    7.24     15
304.0 4642.0 3000.0     3.91    2.13     15
304.0 4645.0 3000.0     3.21    1.59     15
304.0 4648.0 3000.0    18.34    3.75     15
304.0 4651.0 3000.0    24.01    4.04     15
304.0 4654.0 3000.0     3.13    1.21     15
307.0 4576.0 3000.0     0.00    0.00     15
307.0 4579.0 3000.0     0.00    0.00     15
307.0 4582.0 3000.0     0.00    0.00     15
307.0 4585.0 3000.0     0.00    0.00     15
307.0 4588.0 3000.0     0.00    0.00     15
307.0 4591.0 3000.0     5.93    1.84     15
307.0 4594.0 3000.0    14.33    4.35     15
307.0 4597.0 3000.0    19.08    6.38     15
```

```
307.0 4600.0 3000.0      7.69       2.31       15
307.0 4603.0 3000.0     25.97       2.92       15
307.0 4606.0 3000.0      9.29       0.68       15
307.0 4609.0 3000.0      7.13       0.66       15
307.0 4612.0 3000.0      0.19       0.10       15
307.0 4615.0 3000.0      2.73       0.59       15
307.0 4618.0 3000.0      1.47       0.53       15
307.0 4621.0 3000.0     11.67       3.60       15
307.0 4624.0 3000.0      2.57       1.21       15
307.0 4627.0 3000.0      8.58       2.02       15
307.0 4630.0 3000.0      1.15       1.41       15
307.0 4633.0 3000.0      1.90       1.39       15
307.0 4636.0 3000.0      1.14       1.16       15
307.0 4639.0 3000.0      5.26       2.09       15
307.0 4642.0 3000.0     12.29       2.38       15
307.0 4645.0 3000.0     26.92       3.91       15
307.0 4648.0 3000.0     71.27       3.43       15
307.0 4651.0 3000.0     22.26       3.45       15
307.0 4654.0 3000.0      3.76       1.07       15
310.0 4576.0 3000.0      0.00       0.00       15
310.0 4579.0 3000.0      0.00       0.00       15
310.0 4582.0 3000.0      0.00       0.00       15
310.0 4585.0 3000.0      0.00       0.00       15
310.0 4588.0 3000.0      0.00       0.00       15
310.0 4591.0 3000.0      0.67       0.07       15
310.0 4594.0 3000.0      1.65       0.60       15
310.0 4597.0 3000.0      1.77       0.72       15
310.0 4600.0 3000.0      1.06       1.30       15
310.0 4603.0 3000.0      6.56       2.32       15
310.0 4606.0 3000.0      5.11       3.50       15
310.0 4609.0 3000.0     37.04       6.59       15
310.0 4612.0 3000.0      4.46       2.11       15
310.0 4615.0 3000.0     41.66       6.83       15
310.0 4618.0 3000.0     12.89       4.40       15
310.0 4621.0 3000.0     26.46       4.39       15
310.0 4624.0 3000.0      4.61       1.74       15
310.0 4627.0 3000.0      0.17       0.47       15
310.0 4630.0 3000.0      0.54       0.43       15
310.0 4633.0 3000.0      0.41       0.48       15
310.0 4636.0 3000.0      0.33       0.46       15
310.0 4639.0 3000.0      0.43       0.49       15
310.0 4642.0 3000.0     12.40       2.84       15
310.0 4645.0 3000.0     57.75       6.79       15
310.0 4648.0 3000.0      1.77       1.54       15
310.0 4651.0 3000.0      1.68       0.82       15
310.0 4654.0 3000.0      1.08       2.00       15
313.0 4576.0 3000.0      0.00       0.00       15
313.0 4579.0 3000.0      0.00       0.00       15
313.0 4582.0 3000.0      0.00       0.00       15
313.0 4585.0 3000.0      0.00       0.00       15
313.0 4588.0 3000.0      0.00       0.00       15
313.0 4591.0 3000.0      0.00       0.00       15
313.0 4594.0 3000.0      0.01       0.00       15
313.0 4597.0 3000.0      1.42       0.17       15
313.0 4600.0 3000.0      0.91       0.23       15
313.0 4603.0 3000.0      [illegible]       0.15       15
313.0 4606.0 3000.0      5.54       0.17       15
313.0 4609.0 3000.0     15.72       4.37       15
313.0 4612.0 3000.0      3.61       1.03       15
```

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```
313.0 4615.0 3000.0      1.96      0.23      15
313.0 4618.0 3000.0      1.13      0.58      15
313.0 4621.0 3000.0      1.73      1.17      15
313.0 4624.0 3000.0      5.61      1.57      15
313.0 4627.0 3000.0      0.82      0.65      15
313.0 4630.0 3000.0      1.12      0.60      15
313.0 4633.0 3000.0      5.10      0.92      15
313.0 4636.0 3000.0      0.86      0.55      15
313.0 4639.0 3000.0      1.26      0.62      15
313.0 4642.0 3000.0      2.00      1.71      15
313.0 4645.0 3000.0      3.19      1.42      15
313.0 4648.0 3000.0      0.78      0.52      15
313.0 4651.0 3000.0      1.10      0.53      15
313.0 4654.0 3000.0      7.50      1.35      15
316.0 4576.0 3000.0      0.00      0.00      15
316.0 4579.0 3000.0      0.00      0.00      15
316.0 4582.0 3000.0      0.00      0.00      15
316.0 4585.0 3000.0      0.00      0.00      15
316.0 4588.0 3000.0      0.00      0.00      15
316.0 4591.0 3000.0      0.59      0.26      15
316.0 4594.0 3000.0      1.07      0.34      15
316.0 4597.0 3000.0      0.58      0.30      15
316.0 4600.0 3000.0      0.28      0.24      15
316.0 4603.0 3000.0      1.00      0.61      15
316.0 4606.0 3000.0      1.27      0.82      15
316.0 4609.0 3000.0      0.92      0.64      15
316.0 4612.0 3000.0      5.33      4.58      15
316.0 4615.0 3000.0     68.28      7.84      15
316.0 4618.0 3000.0     58.36      5.77      15
316.0 4621.0 3000.0     15.56      3.63      15
316.0 4624.0 3000.0      2.59      1.34      15
316.0 4627.0 3000.0      2.88      1.02      15
316.0 4630.0 3000.0      0.27      0.41      15
316.0 4633.0 3000.0      0.86      0.53      15
316.0 4636.0 3000.0      1.01      0.53      15
316.0 4639.0 3000.0      0.98      0.82      15
316.0 4642.0 3000.0      0.63      0.57      15
316.0 4645.0 3000.0     13.14      1.65      15
316.0 4648.0 3000.0      5.15      1.06      15
316.0 4651.0 3000.0      5.58      1.04      15
316.0 4654.0 3000.0     40.30      4.15      15
319.0 4576.0 3000.0      0.00      0.00      15
319.0 4579.0 3000.0      0.00      0.00      15
319.0 4582.0 3000.0      0.00      0.00      15
319.0 4585.0 3000.0      0.00      0.00      15
319.0 4588.0 3000.0      0.00      0.00      15
319.0 4591.0 3000.0      0.20      0.06      15
319.0 4594.0 3000.0      0.56      0.26      15
319.0 4597.0 3000.0      0.25      0.21      15
319.0 4600.0 3000.0      0.19      0.20      15
319.0 4603.0 3000.0      0.57      0.53      15
319.0 4606.0 3000.0      0.61      0.64      15
319.0 4609.0 3000.0      2.17      0.93      15
319.0 4612.0 3000.0      2.80      2.20      15
319.0 4615.0 3000.0     84.62     12.14      15
319.0 4618.0 3000.0    121.91     13.13      15
319.0 4621.0 3000.0     34.41      6.46      15
319.0 4624.0 3000.0      4.63      2.48      15
319.0 4627.0 3000.0      0.87      1.26      15
```

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```
319.0 4630.0 3000.0     4.[illegible]     0.47      15
319.0 4633.0 3000.0     0.[illegible]     0.57      15
319.0 4636.0 3000.0     3.59      0.72      15
319.0 4639.0 3000.0     1.04      1.11      15
319.0 4642.0 3000.0     2.75      0.96      15
319.0 4645.0 3000.0     4.95      0.67      15
319.0 4648.0 3000.0     2.11      0.65      15
319.0 4651.0 3000.0     0.95      0.55      15
319.0 4654.0 3000.0     0.83      0.51      15
```